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AGRICULTURE

No. 222

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CONTENTS

PEOPLE'S REPUBLIC OF CHINA

I. GENERAL INFORMATION

COTTON PROCUREMENT REACHES ALL-TIME HIGH

Jinan DAZHONG RIBAO in Chinese 26 Jun 82 p 1

[Article: "1981 National Cotton Procurement at More Than 57 Million Dan. Cotton Procurement in Shandong at More Than 13 Million Dan, a More Than 2.5 Million Dan Increase Over 1980"]

[Text] The correspondent has learned from the national conference on cotton and hemp procurement, inspection and processing work convened today that as of the end of May, 57 million dan of the cotton procurement quota for 1981 (from September 1981 to August 1982) had been fulfilled, with 4 million dan more procured than in 1980 to create an all-time high for cotton procurement since the founding of the People's Republic. These figures include a more than 13 million dan cotton procurement in Shandong Province, which was 2.5 million dan more than in 1980, and a more than 11 million dan procurement in Jiangsu, which was somewhat more than 2.8 million dan more than in 1980. Anhui, Hebei, Henan, Xinjiang, Liaoning, Hunan, and Jiangxi provinces all overfulfilled cotton procurement plans.

Increase in the quantity of cotton procured has provided ample raw materials for the country's cotton textile industries, and goes a long way toward ameliorating the cotton supply shortage and satisfying the needs of production in the light and textile industries. National cotton reserves were 22 percent greater in 1981 than in 1979 for a corresponding decrease in cotton imports. In 1980 cotton imports were 11 percent less than in the previous year, and in 1981, they fell by another 32 percent over the previous year.

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CSO: 4007/1550

SAFETY REGULATIONS FOR PESTICIDES ISSUED

Nanjing XINHUA RIBAO in Chinese 11 Jul 82 p 2

[Article: "Strictly Carry Out Regulations For Safe Use of Pesticides"]

[Text] Editor's Note. During the years there have been many accidental deaths from pesticide poisoning. This is attributable largely to failure on the part of many communes and brigades to "centralize" pest eradication work, and to allowing individual households to buy, store, and use pesticides following institution of responsibility systems linking output to individual laborers.

We have already entered the season when large quantitities of pesticides are used to control diseases and insect pests, and we should genuinely strengthen leadership in safe use of pesticides, institute a comprehensive one time check production team by production team, and institute concrete measures. In order that the broad masses of grassroots level cadres, commune members, and those specializing in pest control will be able to master knowledge about the safe use of pesticides, specially reprinted here are "Safety Regulations For the Use of Pesticides," published by the Ministry of Agriculture, Animal Husbandry, and Fisheries, and the Ministry of Public Health. It is hoped that all jurisdictions will conscientiously carry out these regulations to assure the health and safety of the masses of people.

Safety Regulations For the Use of Pesticides

Use of chemical pesticides to prevent and control diseases, insect pests, weeds, and rats is an important measure in winning bumper agricultural harvests. But unless used properly, they can pollute the environment and agricultural and livestock products, poison people and livestock, or cause death. In order to assure their safe production, the following regulations have been drawn up:

I. Pesticide Classification

On the basis of an overall appraisal of toxicity (acute ingestion, poisoning through the skin, and chronic poisoning), common pesticides currently produced have been classified as being of high toxicity, moderate toxicity, and low toxicity.

1. Pesticides of High Toxicity: American Cyanamid 3911, suhua [5685 0553], parathion, parathion methyl, demeton, shamingwei [3010 5820 1218], monocrotophos, phosphamidon, methamidophos, yibinglin [3976 0014 4340], carbophenothion, omethoate, zinc phosphide, aluminum phosphide, cyanide, furanose, fluoroacetanilide, diarsenci trioxide, shachongmi [3010 5849 518B], ethulmercury-chloride, Ceresan, kueiyangjing [3391 4046 0403], chloropicrin, pentachlorophenol, ethylene dibromide, and 401.

2. Pesticides of Moderate Toxicity: sumithion, dimethoate, phenthoate, ethion, imidan, piyinglin [4122 5859 4340], benzene hexachloride, lindane, toxaphene, chlordane, DDT, carbaryl, haipuwei [1365 2333 1218], MIPC, tsumacide, hunmiewei [3236 3528 1218], pirimicarb, fenthion, dichlorvos, juzhi [5468 7927] types intended for the eradication of insects, edinphensoph, EBP, dikesong [2420 0460 2646], 402, asomate, daojiaoqing [4470 5183 7230], tuijunte [6622 5497 3676], ambam, milneb, yanmaidi [3601 7796 2420], 2-4 D, and qingcaoan [3021 5430 5143].

3. Pesticides of Low Toxicity. trichlorfon, malathion, acephate, phoxim, tetradifon, carbendaxol, triophanate, captan, zineb, thiram, weixiuling [5494 6907 7227], IBP , Yilinlu [0044 1340 6986], chlorothalonil, nitrofen, propanil, atelajin [7093 3676 2139 3160], butachlor, lasu [2139 4790], benthiocarb, MCPA, lumailong [4845 7796 7127], diuron, trifluralin, bendasong [0058 6671 2646], dichloropropionic acid, and Hercules.

Contact with only extremely small quantities of high toxic pesticides can cause poisoning or death. Though pesticides of moderate and low toxicity are less toxic than highly toxic pesticides; nevertheless, unless rescue in time after sustained contact, death can result. Thus, when using pesticides, one must practice economy and safety.

II. Scope of Pesticide Use

All varieties for which "Pesticide Safe Use Standards" have been formulated should be used in accordance with the "standards." For varieties for which no "standards" have as yet been formulated, the following rules should be followed:

1. Pesticides of High Toxicity: Not to be used on vegetables, tea, fruit trees, or traditional Chinese medicinal plants. Not to be used for the prevention and control of insects that are injurious to public health or on skin diseases of people or livestock. Not to be used to poison rats except in rat poisons. Fluoroacetanilide is prohibited for use on farm crops and may not be used to kill rats. American cyanamide 3911 emulsion may be used only for

disinfection of seeds; it is prohibited from use as a spray. Furanose pellets may be used only for disinfecting seeds, or may be used to disinfect the soil either by being put into furrows with a tool or spread with a gloved hand; it may not be mixed with water and sprayed.

2. Pesticides of High Residual Toxicity: benzene hexachloride, DDT, and chlordane may not be used on fruit trees, vegetables, tea shrubs, Chinese medicinal plants, tobacco, coffee, pepper, or lemongrass. Chlordane may be used only for disinfecting seeds and for prevention and control of injurious subterranean insects.

Chlorophenamidine. May be used in prevention and control of red spiders on cotton and for paddy rice borers. Research results on chlorophenamidine toxicity show that its use should be controlled. It may be used only once throughout the entire period of rice growth. When 2-liang (100 grams) of Chlorophenamidine per mu in a 25-percent water solution is used, it may not be applied less than 40 days from the harvest; when 4 liang (200 grams) of Chlorophenamidine per mu in a 25-percent water solution is used, it may not be applied any less than 70 days before the harvest. It is forbidden for use on other goods, edible oil crops, vegetables, fruit trees, Chinese medicinal plants, tea, tobacco, sugarcane, or sugar beets. When used for the prevention and control of insect pests of cotton, utmost control should be exercised in the number of times and amounts used. When sprayed, direct contact between the solution and the human body are to be avoided.

3. It is forbidden to use pesticides to poison fish, shrimp, frogs, and beneficial birds.

III. Purchase, Transportation and Storage of Pesticides

1. Pesticides are to be purchased by user unit designated persons holding certificates. When buying pesticides, attention must be given to their packaging to prevent breaks and leaks. Attention is to be given the name of the item, content of effective ingredients, the ex-factory date, and instructions for use. Insecticides the uses for which are uncertain and those that have lost effectiveness may not be used.

2. In transporting pesticides, one should first check the packaging to make sure it is intact. If any leaks or breaks are discovered, the insecticide should be repackaged using designated material after which it may be transported. Ground, transportation vehicles or packaging materials that have been contaminated should be properly and promptly handled. When moving pesticides, they should be handled gently.

3. Pesticides should not be carried or placed together with grain, vegetables, melons and fruits, foodstuffs, or items used in daily life.

4. Pesticides should be stored centrally in special warehouses or special chests in production teams, work teams, or specialized work units, and be looked after by designated persons. They may not be stored in individual

households. Doors and windows should be secure; ventilation conditions should be good; and doors and chests should be locked.

5. A registration procedure should be established for taking pesticides into or out of warehouses. They may not be arbitrarily deposited or removed.

IV. Matters To Be Given Attention in Using Pesticides

1. When compounding pesticides, those involved are to wear rubber gloves, and they must use measuring instruments to weigh out the specific amount of solution or powder. They may not arbitrarily increase amounts used. Mixing of pesticides with the hands is strictly forbidden.

2. When disinfecting seeds, a tool must be used for mixing. The amount of mixing done depending on the amount of pesticide being used. Disinfected seeds must, to the maximum extent possible, be sown by machines. If spread by hand or dibbled, protective gloves must be used in order to prevent absorbing the poisons. Toxic seeds left over are to be destroyed; they may not be used either for human consumption or for animal feed.

3. Compounding of pesticides or disinfection of seeds should be carried out at a safe place distant from sources of drinking water and residential sites. A person is to be designated to be in charge to make sure that pesticides or toxic seeds are not lost or mistakenly eaten by people, livestock, or domestic fowl.

4. When using hand powered spraying devices, spraying should be done one row distant. Hand operated or power driven pesticide devices should not be used to spray from both the left and the right side at the same time. Spraying with pesticides should be stopped during high winds or during high noon temperatures. One should not overfill pesticide containers so pesticide will not slop out, contaminating the bodies of those applying the pesticide.

5. Before beginning spraying, openings of pesticide devices should be carefully inspected as should all connections, and the spraying head to make sure that screws are tight and that there are no leaks in containers to avoid contaminating pesticide leaks. If, while spraying pesticide, any stoppages occur, the equipment should first be flushed with clear water after which the obstruction can be removed. It is positively forbidden to use the mouth to blow or suck the spray head and filtering screens.

6. Places using pesticides of overly high toxicity should set up standards, prohibiting at certain fixed times the pasturing of livestock, the cutting of hay, and the digging of edible wild herbs to prevent people or livestock from being poisoned.

7. After pesticide use has been completed, spraying equipment should be thoroughly washed, and returned together with any left over pesticide mixture to the warehouse for storage. It may not be taken home. The wash water used to clean the pesticide equipment should be properly disposed of in a safe

place. It should not be poured any place on the ground so as to prevent pollution of sources of drinking water and ponds used for the raising of fish. Pesticide containers may not be used to hold grain, edible oil, wine, or water. Empty pesticide boxes, bottles, and bags are to be centrally handled. Containers used to disinfect seeds should be thoroughly washed and stored in a centrally supervised place.

V. Selection of Pesticide Personnel and Individual Protection

1. Production teams should select as pesticide personnel young able-bodied men in good health who are responsible, and they should receive a certain amount of technical training.

2. Those who are weak in body and frequently ill, those suffering from skin ailments and those who have not yet recovered health after having been poisoned by pesticides or having been otherwise ill, women who are nursing, are pregnant, or are menstruating, and those with as yet unhealed skin wounds should not spray pesticides or should temporarily halt spraying pesticides. Children are not to be taken to work sites at the time of spraying.

3. Pesticide personnel are not to drink alcoholic beverages during the period when pesticides are being applied.

4. When applying pesticides, pesticide personnel must wear protective masks over their mouths, wear long sleeved clothing, trousers, socks, and shoes. When at work, smoking, drinking water, and eating is forbidden, and hands are not to be used to wipe the mouth, face, or eyes. Horseplay involving spraying one another is positively not permitted. After work, before drinking, smoking, or eating, the hands and face should be thoroughly washed with soap and the mouth washed out. Where conditions permit, a bath should be taken. Work clothing contaminated with pesticide should be promptly changed and washed.

5. Pesticide personnel should usually not spray for more than 6 hours a day. Two people should take turns operating machine operated spraying equipment carried on the back. After spraying pesticide from 3 to 5 days, 1 day of rest should be taken.

6. Should operators get a headache, dizziness, nausea, or vomit, they should leave the spraying site at once, take off their contiminated clothing, rinse their mouths, wash their hands, face, skin, and such exposed parts, and be sent promptly to a hospital for treatment.

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IMPORT OF AGRICULTURAL SCIENCE, TECHNOLOGY IN NATIONAL ECONOMY

Tianjin KEXUEXUE YU KEXUE JISHU GUANLI [SCIENOLOGY AND THE MANAGEMENT OF SCIENCE AND TECHNOLOGY] in Chinese No 3, 1982 pp 35-36

[Article by Xin Naiquan [0207 6621 6112], Research Managment Department, Chinese Academy of Agricultural Sciences: "Agricultural Science and Technology Has Become a Productive Force of Ever Increasing Importance"]

[Text] Agriculture is the foundation of the national economy. Growth of agriculture depends on policies first and on science second. Agricultural science and technology must adhere to a program of serving agricultural production to give impetus to the high speed development of agricultural production. This is a major issue that bears on the building of modern agriculture as a whole and on the future of the building of socialism.

Science and technology is a productive force not only in industry but in agriculture as well:

1. Development of genetic theories and breakthroughs in breeding techniques have increased farm crop output tremendously. In 1918, American scientists bred hybrid corn, which began to be extended to cultivation during the 1920's. During the 1940's and the 1960's the speed of increased yields was a general 100 jin per mu every 10 years, and during the 1960's and 1970's, the speed of increase in yields was almost 200 jin per mu every 10 years. In 1979 more than 400 million mu were planted producing average yields of 915 jin per mu. Statistics show that among the major factors in increased corn yields, hybrids accounted for between 40 and 50 percent. After corn and gaoliang, breakthroughs in China's hybrid rice produced new takeoffs in output. The coherent matching of "three lines" was achieved in 1975, and in 1976 hybrids were extended to wide area cultivation. By 1980 the five year accumulated area of cultivation amounted to more than 250 million mu, and paddy output increased to more than 26 billion jin or more than 2.6 million renminbi in money terms. Not only did hybrid rice produce tremendous economic benefits within the country, but it is in process of moving forward in some of the countries of the world. In 1977, test plantings succeeded in Kampuchea, and in 1979 the Philippine International Rice Institute did test plantings. In 1980 China's first patent on agricultural technology was transferred to the United States where direct cuttage [4160 8422] experiments with five combinations have been conducted resulting in 1.6 to 1.8 fold yield increases as compared with local fine varieties.

2. Development of Farmland Water Conservancy and Biology Have Blazed a New Trail for Improvement of Low Yield Fields. China's plains of the Huang and the Huai have long been areas of numerous disasters and low yields. During recent years, as a result of investigation and study, a system has been worked out that uses deep ditches and a combination of lifting water for drainage and lifting water for irrigation, a combination of well irrigation and ditch irrigation, and a combination of extracting and using saline river irrigation with ditch drainage to provide scientific evidence for comprehensive control of drought, waterlogging, alkalinity, and infertility. Right now in the Lingxian and Yucheng experimental areas alone, this system is used on 150,000 mu, and the area on which it is being demonstrated and promoted amounts to 3 million mu. Grain yields per unit of area have increased from the 180 to 200 jin before control to between 465 and 513 jin. Cotton yields have increased from the former 84.5 jin to 192.5 jin. In the Lingxian experimental area, average commune member earnings increased from 54.10 yuan per capita in 1975 to 132.40 yuan. In the Yucheng experimental area, commune member per capita earnings decreased from 40.70 yuan in 1975 to 96.50 yuan in an initial change in the situation of many disasters and low yields. The red and yellow soil hills and mountain lands in South China, which are found over a wide area, are China's major soil resource. Adaptation of general methods to local situations for comprehensive control has won remarkable results during the past several years, and a group of grain, oil, and sugar production bases have been established to make a contribution to the country.

3. Development of Plant Protection Science and Chemistry Has Effectively Reduced and Controlled Diseases and Insect Pests, Has Reduced Losses, and Has Increased Output. Locusts have plagued China throughout history. Since the founding of the People's Republic great results have been scored through the organization of researchers to go into locust areas to investigate and study, and to summarize experiences. Incomplete statistics show a former locust area nationally of somewhat more than 60 million mu, which has now been reduced to somewhat more than 14 million mu. Between 1956 and 1965 more than 30 billion jin of grain was saved thereby. Rust is China's most serious wheat disease. In 1950 it was prevalent throughout the country reducing output by more than 12 billion jin. In 1964 it again caused damage over an area of 120 million mu. In Hebei, Shandong, Jiangsu, Shaanxi, Shanxi, Gansu, and Beijing alone, it reduced yields by more than 2 billion jin. In 1965, with the loving concern of Premier Zhou, the State Council approved a national cooperative program for the eradication of wheat rust, further intensified scientific research, and put forward a comprehensive policy of prevention and control of "taking disease resistant varieties as the key supported by chemical prevention and control and farming methods." Since 1965 damage resulting from epidemics of wheat rust has been substantially controlled for an annual wheat saving of more than 2 billion jin, which converts to 250 million renminbi.

4. Growth of Animal Husbandry Science and Livestock Feeding Science Has Doubled the Return on Livestock Feed and Greatly Shortened the Feeding Cycle. Hybrid heterosis has been widely applied to chickens, hogs, and cattle. In the United States in 1956 hybrid chickens accounted for 73.4 percent of those sold; in Japan in 1969, it was 76 percent; in Canada the finest eggs came from

hybrid chickens, each hen laying 258 eggs each year, each egg weighing 61.3 grams, with a feed consumption rate of 2.45. Breeding has produced remarkable successes in hog quality. Danish "Landraces" are a world famous bacon type hog variety characterized by much lean meat and an average daily weight increase of from 623 to 737 grams, and for which the feed consumption per kilogram of weight gain has been reduced from 3.76 kilograms to 2.93 kilograms. In California, American buffaloes have been crossed with beef cattle to breed a new variety of beef cattle called "beefaloes." In the course of a 8 to 10 month period of grass pasturage, body weight reaches 454 kilograms; meat quality is good and production costs are low. As a result of innovations in power and machinery science and technology, in particular, the mechanization and factorization of chicken, hog, and cattle raising have developed very rapidly, tremendously increasing labor productivity rates. Under conditions of factorized feeding, at 8 months meat chickens weigh 2 kilograms; at 6 months fattened hogs weigh between 90 and 100 kilograms; and high producing milk cow herds average 8,000 to 9,000 kilograms of milk per cow annually.

One can see clearly from all this the role of agricultural science and technology. Agricultural science and technology as a productive force will certainly more and more demonstrate its tremendous power. However, our understanding of the productivity of agricultural science in the practice of production is very inadequate and the pernicious influence of it being "all right to have or not to have" is rather serious. For this reason, it is necessary to hasten the pace of agricultural science and technology so that scientific research will be in the forefront of the building of production, and science and technology applied to increase labor productivity and the development of agricultural production. This is a key measure in educating and leading the broad masses to bring about the modernization of agriculture.

If agricultural science is to be in the forefront of the building of production, it is necessary, first of all, to provide agricultural production with the fruits of science and technology. The new tasks and new problems that development of agricultural production raises require that we study and explore, on the basis of the objective laws of agricultural production, the various possible problems that can crop up in each stage of development the better to prepare promptly ways and means of solving them, and to increase scientific and technical reserves. Such an anticipatory development of scientific research can make the most of the tremendous role of agricultural science and technology in guiding production and in giving impetus to production.

If agricultural science and technology is to be in the forefront of the building of production, it is also necessary to steadily pioneer new fields of science and technology, to fill in gaps, and to strengthen weak links. Because of the permeation of modern mathematics, physics, chemistry, and biology, profound changes have occurred in agricultural science and new leaps have occurred. Examples include use of atomic energy and computer technology achievements to study the application to agriculture of research on isotope and nuclear technology and electronic computers. Since the 1970's, the United States has used remote sensing technology to observe from earth resource

satellites the earth's soils, changes in fertility, changes in readication and spread of diseases and insect pests, drought and flood disasters and agricultural crop output forecasts in an extremely broad field of applications. In the past the United Kingdom conducted several soil utilization surveys, each time mobilizing 6,000 people to work steadily for 6 years. In 1976, they conducted their fourth survey using data from earth resource satellites using only four people and 9 months' time to complete the job, which was several times better. All these things have meant extremely tremendous progress for agricultural production and techniques. New developments in modern science and technology are occurring at an unprecedented pace and scope, and their application to agricultural production is promoting the modernization of agriculture.

If agricultural science is to be in the forefront of the building of production, it is necessary to vigorously intensify application of basic research. Back in the 1950's, Premier Zhou reminded us that "If we do not promptly devote more attention to long range needs and theoretical work, we will make a very great mistake. Without a certain amount of research in theoretical science as a foundation, there can be no fundamental progress or innovation in technology." Application to agricultural science of basic research depends on development of social productivity and the application of newly emerging technology. It is, in addition, the leading edge of all agricultural science and technology. Consequently, vigorous intensification of the application of basic research such as investigation of soil, water, and agricultural climate resources and agricultural crop, livestock and poultry variety resources, as well as genetic breeding, and the physiological ecology; application of basic research of major significance for agricultural science and agricultural technology such as genetic engineering, photosynthesis, the fixing of nitrogen by plants, and resistance mechanisms also require active research and exploration. Even if it is difficult to see for the time being the actual uses to which basic research can be applied, where conditions permit, appropriate resources should be devoted to it. Only when attention is given the application of basic research and there are abundant scientific reserves can impetus be given the development of all agricultural science and technology to spur on major technical innovations or even a technical revolution.

Since the Third Plenary Session of the 11th Party Central Committee, the situation on the agricultural science and technology front has been very good. Under the leadership of the CCP Central Committee, we must do all around planning, equitably distribute, readjust and restructure the agricultural research system, revive and perfect the system of promoting agricultural technology, take vigorous action to hasten the building of an agricultural science and technology corps, gradually improve conditions for research work, install the required instruments and equipment, and upgrade agricultural science and technology with all possible speed so that agricultural research will be in the forefront of the building of production, making new contributions to realization of agricultural modernization.

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NEW TASKS IN DEVELOPMENT OF FARM MACHINERY OUTLINED

Beijing NONGYE JIXIE XUEBAO [TRANSLATIONS OF THE CHINESE SOCIETY OF AGRICULTURAL MACHINERY] in Chinese No 1, 1982 pp 1-6

[Article by Hua Guozhu [5478 0948 2691], Chinese Academy of Agricultural Mechanization Sciences: "New Tasks in the Development of Agricultural Machinery"]

[Excerpts] (Summary) This article analyzes the new requirements in all around development of the mechanization of agriculture in the new situation of development of China's agricultural economy. The article presents some ideas about research tasks and improvements in research organizations for agricultural mechanization, the design and manufacture of new farm machines, for new sources of energy for agricultural use, and for improving quality of research personnel and strengthening management of research.

Research and development work is rooted in the needs of the development of production and in service to economic development. During the past more than 30 years, agricultural machinery developmental work has gradually developed in accordance with needs for development of agricultural production, for supplementing old farm implements, promoting new farm implements and actively carrying out the mechanization of agriculture, for improving old farm implements, for introducing, experimenting with, designing, and promoting new farm implements pulled by animals, for copying, and for improving and manufacturing mechanized farm implements, with many achievements having been made. Today China has more than 200 million horsepower of electro-mechanical power, and about 2,000 mechanized implements of various kinds, specifications, and models for farm and pastoral use. These are in use in all areas of agricultural production where they increase the capabilities of agricultural labor, decrease damage to agriculture caused by natural disasters, promote the carrying out of measures for increased production by the farming and livestock industries and their completion on time, and play a major role in increased agricultural production and earnings, increased peasant income, and development of the agricultural economy.

Despite waterlogging in the south and drought in the north during 1980 such as has rarely occurred in several decades, a bumper harvest was won in agriculture. Grain output totaled 636.44 billion jin, making it the second highest year for output, second only to 1979, since founding of the People's

Republic. Outputs of cotton, oil-bearing crops, sugarcane, sugar beets, jute, ambari hemp, silkworm cocoons, and tea all reached all-time highs. Substantial increase occurred in livestock production, output of pork, beef, mutton and goat totaling 24.19 billion jin, a 13.5 percent increase over 1979. Fairly rapid development also took place in rural commune and brigade economic diversification and in commune family sideline occupations. Gross earnings for the country's commune and brigade enterprises totaled 61.4 billion yuan, a 22 percent increase over the previous year.

As a result of increased agricultural production, a prise rise for the principle agricultural products, and development of commune household sideline occupations, peasant income increased strikingly. Data from the State Statistic Bureau show that during the past 3 years peasant income from the sale of commodities and from other labor or service activities has increased by a total of 31.04 billion yuan. Accompanying increase in peasant income has been a corresponding improvement in their livelihood. During 1980 more dwellings were constructed in rural areas than in any of the past 30 years.

As a result of rural economic development and readjustment of the structure of agricultural production, the peasants have raised new demands for the mechanization of agriculture. As peasant incomes have increased, the ability to buy farm machines has risen. In 1980 total personal outlays by commune and brigade peasants to buy machinery were greater than in 1979. Most rural areas practiced the contracting of production or work tasks to individual households with a curtailment of the scale of farming and the size of some field plots becoming smaller, purchases of farm implements being done by individual households or an association of households (a new collective economic body). Thus need for low power farm implements with associated equipment, hand tractors, animal-drawn carts, small water pumps, spraying machines, threshers, rice flour processing machines and grinding machines has increased. In a small number of areas where production levels are fairly high and collective farming is done, there is continued need for development of large and medium size farm machines, which places higher demands on farm implements. In the case of planting machines, for example, the need is for both precision and semi-precision machines. Threshing machines that simultaneously clean the grain are wanted, and combines are wanted for harvesting. Dryers are needed for grain, tea, tobacco and tremella, but since water content and drying requirements differ for various things, drying machines must be of diverse kinds.

In equitable readjustment of the structure of agricultural production and of crop patterns there will be improvement in the growing of grain crops to increase yields per unit of area, and there will be all-around development of economic crops and of forestry, livestock raising, sideline occupations, and fisheries. In the development of agriculture, there will be an adaptation of general methods to local situations for a strengthening of both biological and engineering measures. Accompanying increase in agricultural products will come an increase in the amount of transportation, processing, storage, and marketing. Increase in avenues of agricultural production will mean greatly increased demand for varieties of farm implements.

Expansion of peasant self-determination in production also entails deciding for themselves the farm implements to be selected. The peasants not only demand farm implements that work well and meet agricultural production needs, but also demand good quality, durability and dependability, and low prices so that after using the farm implements they will be able to derive greater economic benefits.

From this may be seen that the new situation in development of the agricultural economy has brought about new changes in requirements for the mechanization of agriculture. With the development of agricultural production and the passage of time, agricultural mechanization will enter a new era of all-around development. Agricultural mechanization will change from primarily serving grain farming to serving development of all of large scale agriculture, and the farm machine industry will be required not only to provide implements for consistently high grain output, but will also be required to serve development of economic crops such as cotton, edible oil, sugar and tea, the development of forestry, livestock raising, sideline occupations and fisheries, and serve the building of agricultural bases and improvement of peasant livelihood. The farm machine industry will have to provide diverse kinds of implements and equipment for farm use. Agricultural mechanization will gradually change from the basic mechanization stage, with mechanization of several major operations, to all-around mechanization with the use of machines in all the places and all the units in which machines can be used. This is an objective law that cannot be changed by people's wills. The laws of development of agricultural mechanization in foreign countries have been like this, and the laws of development of agricultural mechanization in China will also be like this. Naturally, in individual areas or individual production units there will also be the problem of how to go about mechanization, i.e., what to mechanize first and what to mechanize last. Formerly mechanization was begun with things urgently requiring action or with key projects, but now selective mechanization has to be done. Projects for mechanization have to develop from the few to the many; machine techniques must proceed from the simple to the complex; and the extent of mechanization must go from low to high. For the country as a whole, very great increase will take place in what is mechanized, and in the kinds and specifications of farm implements. Nevertheless, the extent of mechanization and quantities of machines required will depend on development of the rural economy, on changes in agricultural work forces, and on the ability of the state to supply energy and provide equipment and support funds for gradual development.

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Scientific research serves economic development. It must proceed ahead of the build-up of production. Farm machine research must be based on the needs for overall development of agricultural mechanization. While continuing to carry out product research, renewal, replacement, and filling in associated equipment gaps, it is necessary to strengthen research for agricultural mechanization, conduct scientific forecasting for development of agricultural mechanization, strengthen research on basic design and manufacturing techniques for farm machine products, develop farm machine science and technology that fits

in which China's technical and economic levels, and make all-around arrangements for farm machine development tasks on this basis.

(1) Development of Agricultural Mechanization Science and Technology and Research on Technology and Economics. During the past several years all-around zoning of agricultural mechanization has been launched through centralized arrangements made by the state. From a foundation of old agricultural mechanization zoning work, new achievements in agricultural zoning work have been used, emphasis being layed on improving analysis of data derived from the summarization of experiences in agricultural mechanization and on study of technological and economic problems, on investigation and analysis of conditions and characteristics of agricultural mechanization, with designation on the basis of conditions and characteristics and on the basis of the principle of relative consistency throughout the farm machinery system of nine category 1 zones and 36 category 2 zones, the emphasis, steps, and methods for development of mechanization being put forward for the two zone categories. Additionally, on the basis of analysis of adaptability of farm implements and experiments with them plus study of equitable allocation of groups of machines, requirements for farm machinery systems, for development of implements, and for placing them on the market were put forward. This was a task of strategic importance in the development of agricultural mechanization.

Agricultural mechanization must be technically feasible and economically effective. Study of the technology and economics of agricultural mechanization is a foundation for development of so-called applied technology suited to the country's manufacturing and utilization levels, to the level of its agricultural economy, and for the effective development of agricultural mechanization and agricultural machine science and technology. In recent years farm machine scientists, technicians, and management personnel have worked together with economic experts to study technological and economic theories pertaining to agricultural mechanization, and to study technological and economic indicators and evaluation methods, achieving initial results therefrom. They are now actively studying mechanization and the employment of workforces, and mechanization and increases in output and earnings. An additional large number of technological and economic problems such as economic evaluation of new products, new techniques, and new technologies, standards for scrapping old machines, economic analysis of various technical plans, optimum distribution of fuel oil, etc., are in urgent need of research.

(2) Continued Development of New Lines of Farm Implements. Renewal of farm implements cannot be a simple matter of exchanging the new for the old, but rather new articles of higher technological and economic levels must replace outmoded products. Thus, old products must be improved on the basis of requirements for improving efficiency, improving quality, lowering energy consumption, providing a complete line of equipment, san hua [0005 0553], and safe operation. In order to meet the current scale of agricultural production and purchasing power, emphasis must be placed on various kinds of small power machines and associated equipment for plowing, drainage and irrigation, harvesting, processing, hauling, processing of livestock feed, the feeding of poultry and livestock, and farm implements operated by manpower or animal

power. In order to meet needs for improving intensive farming and increasing both yields and earnings, it is necessary to develop a swivel-plow, precision and semi-precision planting machines, machines for deep application of fertilizer, machines for use in the method of slight cultivation that conserve energy and protect the soil, and large cereal grain combines; machines for planting, caring for, harvesting, and processing economic crops, machines for high spraying of pesticides, and machines for processing of agricultural products, dryers, and hauling; machines used for digging ditches, draining water, and clearing away sediment for use in the capital construction of farmland; machines used in the growing, harvesting, storage and harvesting of seeds of pasture grasses to improve pasturelands; 120-160 horsepower tractors and associated farm implements; machines used in the breeding of aquatic products for pond construction, collection and processing of feed, pond harvesting, and in breeding and harvesting in ocean shallows.

(3) Increased Reliability and Useful Life of Farm Machinery. In addition to fulfilling technical performance requirements, modern farm machine products must also be sensibly designed, be reliable, and durable. Therefore, overall improvements are needed in design and manufacture. Study of complete machines must be set on the basis of systems requirements, overall machine unit requirements, and sanhua [0005 0553] requirements. There must be study of the parameters of work components and transmission systems to improve work performance. Modern design methods should be used in combination with traditional experiences in designing. On the basis of strength of individual components, improvements can be effected in the structure and in the selection of materials. It is now possible to gradually set up design and testing standards for farm machine strength beginning with the chassis. In accordance with specialized production requirements, it is necessary to study manufacturing technology and assembly, to improve production management and quality control to assure manufacturing precision and product quality. Testing of models and simulation experiments are necessary to hasten the testing process and shorten the check-out period. In addition, it is necessary gradually to apply the theories and methods of human engineering to study improvements in safety and comfort. Improvement in farm machinery work efficiency, reliability, durability, and comfort can increase both expenditures and raise product costs. Thus it is necessary to study and apply the methods of product economics and valu engineering to carry out study and analysis in the expectation of getting optimum economic benefits from the development of farm machinery science and technology.

'4) Extensive Development of Energy Conservation Technologies and New Sources of Energy for Farm Use. In the short term, lack of fuels and electric power are the major limiting factors in development of agricultural mechanization. Conservation of energy consumption and development for use of new energy sources possess extraordinary significance.

Ome important aspect is improvements in the design of internal combustion engines, which is already being given serious attention and is being actively studied. However, improvements in the operating efficiency of farm implements can also effect very great savings of energy in some cases and are deserving of attention. For example, research on water-powered models of water

pumps shows an increased efficiency of more than five percent for underwater electric pumps used in agriculture, and a two to three percent efficiency increase for large axial flow pumps, both of which are scientific research achievements from which results can be obtained through the organization of promotion. Strengthening of management of oil supplies and reduction of leaks and waste of oil supplies, promotion of light plowing methods, multiple operations, and rationally configured implements, and increased efficiency in use can save on oil consumption and should be done.

China's rural villages are farflung, and in many places local energy resources may be developed for use. In the mountain regions of the south, for example, water power resources are abundant. On the grasslands and along the southeastern seacoast, windpower resources exist that can be used. On the high plateaus and in most rural villages solar energy resources are abundant, and in places where there are coal resources nearby, coal and plant stalks may be used for energy. Places that raise a substantial number of hogs may build large and medium size methane pits and use methane to power internal combustion engines.... Local energy must be developed through the adaptation of general methods to local situations to serve agriculture. Promotion for use of small hydroelectric power generators, solar-powered hot water devices, motors that run on either methane or diesel oil, increasing the number of scientists and technicians doing research on energy use, increased use in agriculture of wind-powered machines, and methane gas generating equipment that uses agricultural materials are all necessary.

(5) Establishment of Scientific Research Methods. During the past several years special research units subordinate to government ministries, some provincial and municipal agricultural institutes, and several major farm machinery institutes have strengthened scientific research methods, installing advanced testing apparatus and small or mini computers. Some have set up various specialized experimental facilities such as soil troughs [0960 2864], threshing test benches, water pump test benches, and remote sensing equipment. Some have installed data handling equipment such as spectrum analysis instruments. Certain individual specialities are already able to conduct fairly sophisticated experimental research. However, in the farm machine industry as a whole research methods are still farily backward; specialized testing equipment is fairly little, and simulation experiments or experiments using models and such rapid experimental methods are virtually not used. Because of the lack of fairly large computers, operations requiring a large volume of calculation are impaired. It is now necessary to continue on the basis of development needs to plan to build new experimental equipment. Existing experimental methods should serve scientific research, play a role, and be further improved. In the case of expensive and rare equipment, in particular, there must be mutual sharing among the haves and the have nots and mutual support to increase the equipment's utilization rate.

3

In order to meet the new situation of all-around development of agricultural mechanization, it is necessary to make further use of the role of the

available scientific research corps. China has already begun to set up a farm machinery research system composed of special research organizations under government ministries devoted to agricultural machines, tractors, internal combustion engines, livestock industry machines, and the mechanization of agriculture, provincial, municipal, and autonomous region farm machine (and farm mechanization) research institutes and farm machine experimental stations, as well as prefecture and county farm implement offices, promotion stations, industrial plant research and design institutes (departments or offices). Units number more than 1,000 and research personnel number almost 10,000. For a long time, they have been engaged in the design of new products by the institutes. In quite a few units, personnel have concentrated on designing a small number of grain crop planting machines and have made definite accomplishments. However, because of unclear divisions of labor and overlapping work, waste has been considerable. Now, if there is to be all-around development of farm machinery and the science and technology concerned with it, the old rigamarole will have to go and the mentality emancipated to open new territory in farm machinery research, and to blaze a new trail in the development of agricultural machinery.

(1) Development of New Farm Machines By Industrial Plants for the Most Part. Farm machinery plants should serve their customers by rapidly changing products and manufacturing techniques that have endured without change for several decades. They should proceed from real requirements in agricultural production to develop new products. To this end, they must reorganize research, design, and technological ranks within the plants, make use of scientific and technical personnel, and study new techniques for developing new products and for manufacturing.

As the scientific and technical corps in industrial plants grows, research units should gradually cut back on product design functions to devote themselves more to scientific research to advance in depth and in breadth in agricultural machinery science and technology, intensifying research on agricultural mechanization problems, on farm machinery design, manufacturing and basic techniques, and on energy technology for agricultural use. They should strive to develop new techniques and provide new results for agricultural mechanization and for development of new lines of farm machines and their production techniques.

Farm machine research works bears both on industrial technology and on agricultural techniques. Only when industry and agriculture are coordinated can there be results. Currently in some of China's farm machine research a split exists between industry and agriculture, with industry frequently caring nothing for agriculture and agriculture ignoring industry. In proceeding from what helps provide farm machinery research results, farm machine research units should not separate industry from agriculture; farm machine product research and farm mechanization research should be closely linked. Moreover, in order to maintain steady development of farm machine research work, research units should be less subject to the administrative system and should have a certain independence.

(2) Adaptation of Measures to Suit Personnel to Make Use of the Role of Research Personnel. Research work is somewhat exploratory in nature. To a fairly large extent, research results depend on the enthusiasm and creativity of research personnel.

At the present time, China's farm machine research personnel are composed largely of three groups. The first group is old research personnel who have a good theoretical foundation and abundant experience, but who are fairly advanced in years. A large number of them have been engaged for a long time in management of science teaching and are now engaged largely in the work of organizing and leading technical vocational work. The second group is composed of middle age research personnel with a good professional grounding, practical experience, and who are in their prime. They are the main force presently directly responsible for research work, and a considerable number of them are technical mainstay cadres. However, their learning and living conditions are rather poor, and a fairly large part of their time is spent doing housekeeping chores. The third group consists of young research personnel who have been graduated during the past few years. They are young and full of vigor, but their grounding is rather poor as a result of the 10 years of turmoil. Some of them have worked hard and studied arduously for a long time, and are now beginning to become research mainstay cadres.

Now is the time to make distinctions in individual situations and adapt measures to suit personnel in order to make use of individual strengths. To make use of the role of mainstay research cadres, mainstay cadres should form a nucleus with reasonable numbers of associates and assistants being provided in order that their research will bring achievements. Except for a small number of mainstay research cadres required to participate in leadership and management classes, most should be given priority for fairly good working and living conditions, exempted from duties, and allowed to concentrate their energies directly on scientific research to produce research results and gradually become genuine experts, not just specialized experts in name only.

It should be noted that among research personnel today a problem of outdated knowledge exists that requires rotational training and augmentation of required basic theories to meet work needs, mastery of necessary modern research techniques and methods, more active participation in academic exchange, enlivening of academic ideas, and all-around improvement in the quality of researchers.

Research personnel should be good at innovating. They should be able, on the basis of production needs or the needs of scientific and technical development, to create new specialized fields and develop new technologies. Right now China's farm machine researchers are faced with a new situation of all-around development of farm machines. They must boldly accept this new task, pioneer new territory, and make new contributions.

(3) Strengthening of Research Management. The level and speed at which science and technology develop are determined, to a certain extent, by the level and quality of management work. Modern science and technology, and

particularly development of farm product technology, relates to many specialities. For example, research and development of any farm machine product involves agronomy, agricultural mechanization, products and spare parts and their basic technologies, and technical economics. Consequently intensification of research management and the organization of numerous units for concerted action plays an ever greater role in winning research results.

Scientific management should include three main aspects: direction, implementation, and application of results.

First is the direction of research. Farm machine and farm mechanization research is developmental research, and research topics should have fairly well defined goals, i.e., the technical levels and economic results to be attained. Second is organization for implementation, including tasks and forces, balanced conditions, and logistical services to create conditions that will assure orderly development of work on the front line of research. Third is prompt evaluation and spread to production of research results to translate science and technology directly into productivity.

Research management should set up priorities in accordance with research work laws from the selection of research topics, to deciding research topics, to execution, to evaluation, and promotion, and should put forward requirements for individual stages of research.

In order to assure smooth progress in the research work and win anticipated results, it is necessary to establish various kinds of technical, economic and even political responsibility systems. Personnel engaged on problems should mainly be technically responsible and results obtained should be technically feasible. Personnel responsible for tasks and institute (or laboratory) leaders, should be both technically and economically responsible to assure that results have economic value and that economic benefits derive from research investment. Through research they should come up with mathematical models to check on economic responsibility of all categories of personnel. Ours is a socialist country in which all work is under the leadership of a unit CCP Committee. Consequently, CCP committees have comprehensive political responsibility for insuring that units play a role in national construction.

4

To summarize the foregoing, China's rural villages rely on policies and on science to begin to direct agricultural development in accordance with economic laws and natural laws. The state of the agricultural economy is very good and places new requirements on agricultural mechanization for all-around development, for developing farming, forestry, livestock raising, sideline occupations, fisheries, and commune and brigade industries, and for improving the peasants' livelihood.

Farm machine research has to come before development of the agricultural economy. Farm mechanization zoning and research on machine systems and on

technological and economic problems must be intensified to provide data for agricultural mechanization and for development of new farm machine products. On the basis of the all-around development of a new situation in agriculture, all-around development of farm machines requires fullness of varieties and numerous specifications. In the short term, emphasis should go toward the adaptation of general methods to specific situations to develop small farm implements and to develop energy saving techniques and new energy sources for agricultural use.

For all around development of farm machines, farm machine research will have to blaze new trails, and bring into play the role of industrial plants in developing new products and new production techniques. Research units should do more scientific research, suit measures to personnel, train and make use of specialists, scientists and technicians, replenish and improve research methods, practice scientific management in accordance with the laws of farm machine research work, emphasize attention to a balance between the direction of research problems and conditions and to the spread of results. In this connection, they should establish research priorities and formulate various kinds of responsibility systems for research and management personnel so that research units will be able to work under fairly stable conditions to produce more results and people of ability.

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NATIONAL SOIL CLASSIFICATION SYSTEM EXPLAINED

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[Article by Xi Chengfan [1598 2110 5672] and Zhang Junmin [1728 0193 3046], Institute of Soil Science, Chinese Academy of Sciences, Nanjing: "The Soil Regions of China"]

[Text] Modernization of China's agriculture entails not only steady increases in grain output but also increase in quantity and quality of the agricultural products derived from forestry, animal husbandry, sideline occupations, and the fishing industry to provide the needs of production and of the people's material life. Therefore, rational utilization of water, soil, sunlight heat, and such non-biological resources, and of animal and plant biological resources, and making the most of the advantages that China's natural conditions provide are important tasks in advancing the modernization of agriculture.

Soil is one of the major elements constituting natural resources. Across the 9.6 million square kilometers of China's land are distributed diverse kinds of soils, which form the foundation for overall agricultural production. Because soil properties differ, their production potential and the ways of improving them for use also differ. In order to suit planting to soil characteristics, improve use according to soil characteristics, and conduct management of farming in accordance with soil characteristics, regional characteristics must be analyzed, and soil combinations found in different regions explored to provide a scientific foundation for planning and developing production.

China has conducted soil investigation and research work for half a century. From a foundation of on-the-ground investigation and research of the country's soil and summarization of experiences in the management of soil use and nurturing its fertility, a large amount of scientific data has been accumulated and forms the principal data for conducting soil zoning.

In 1958, Mao Rongzhi [7456 3310 0037] et al proposed the following zoning scale: zone, region, belt, sub-belt, province, soil region, and soil belt. Five zones were delineated, namely the cool temperate zone, the temperate zone, the warm temperate zone, the sub-tropical zone, and the tropical zone, plus the Qinghai-Tibet Plain region. Division of zones into regions was done,

in the case of the warm temperate zone, as the forest brown earth region, and the arid forest and forest grasslands cinnamon soil region. The principal basis for divisions were: natural vegetation cover types and soil regionality. Soil regions were subdivided into soil zones and sub-zones, delineation of which was done on the basis of the soil's bioclimatic zone characteristics. Further subdivision was done as flatlands, semi-mountain and mountain regions, and province categories. Division below the province was by soil region. No further division was made beyond soil zone. Soil zoning in the "Collection of China Nature Maps" of 1965 was generally the same as this. It contained six to seven categories. In such a method of delineation the levels of each category are clearly demarcated and the reasoning is rigorous, but because of the overly large numbers of categories and the overcomplexity, soil region characteristics do not stand out clearly enough, and the system is hard to remember and apply.

In 1977, in order to compile the chapter titled "Soil Geography" in the book, "China's Natural Geography " China's soils were delineated and simplified into three categories, namely great soil zone, soil zone, and soil region. First the entire country was divided into eight great soil zones as follows:

1. South China and south Yunnan latosol, lateritic red earth, and paddy soil zone.

2. Chang Jiang mid and lower reaches yellow brown soil and paddy soil zone.

3. Jiangnan and southwest red earth, yellow earth, and paddy soil zone.

4. Huang He mid and lower reaches brown earth, cinnamon soil, and dark loessal soil zone.

5. Northeast black soil, planosol, and dark brown soil zone.

6. Nei Monggol Plateau chestnut soil, and brown desert soil region.

7. Gansu, Xinjiang arid desert soil and oasis soil zone.

8. Qinghai-Tibet Plateau alpine soil zone.

For the second high level category, or soil zone, the principal basis is major differences in soil improvement and use. For the third category or soil region, the major basis for distinction is soil composition.

"Outline of China's Multiple Natural Zones" written in 1980 used a three category system to divide up the country's soil regions.* First of all,

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* Xi Chengfan, Qiu Baojian [8002 1405 0494], Zhang Junmin, and Liu Donglai [0491 2639 0171], 1980: Outline of China's Multiple Natural Zones (Preliminary Draft). Written by the National Agricultural Commission Natural Resources Survey and Agricultural Zoning Commission.

in the first category, the entire country was divided into three major natural regions, namely the eastern monsoon region, the northwestern arid region and the Qinghai-Tibetian Plateau region. In the second category, temperature belts were emphasized. From a foundation of summarization of experiences in the growing of tropical plants, China's tropics was divided into poriferal tropics, mid-tropics, and equatorial tropics. The sub-tropics were also delineated into the south, medium, and north sub-tropics. The temperate zone was divided into warm, medium, and cool temperate zones. Thus, the eastern monsoon region was divided from south to north into a total of nine temerature zones on the basis of latitude. Division by corresponding temperature zones was done for the other regions as well. The third region was called an "area" and divided up on the basis of multiple differences of a combination of topography, soil composition, and moisture conditions, every effort being made to describe rather clearly the characteristics of the "area."

1. Delineation of Soil Zones

There are regular patterns to differentiation and distribution of soils on the land surface of the globe. Individual soil units do not exist independently and in isolation, but are mutually related and structurally form arrangements and make-up of every form and hue, some of them forming soil associations, and some of them forming soil complexes, etc. Under similar conditions, these arrangements and make-ups may repeatedly appear. The co-existence of numerous kinds of soil within a natural unit constitutes the individual characteristics of this region's soil utilization, improvement, and management. When actions taken accord with objective laws, production can go full speed ahead and the ecological balance can be advanced. Conversely, countless conflicts will occur in production, and examples of the lessons of painful experience are too numerous to mention one by one. Consequently, soil zones commensurate with the arrangement and make-up of different soil types have been delineated. In different soil zones, the landscape, vegetation cover, and hydrology must inevitably differ. Identical or similar soil combinations are placed within a soil region, and soil combinations that are strikingly different are delineated as being in a different category of soil region. This helps make the most of the production potential of various different kinds of soil, and helps in the planning and development of production.

Looking at the country as a whole, just what soil characteristics should be included the better to accord with the country's actual soil conditions?

Formerly when soil zoning was done in China, the emphasis was on the soil's bioclimatic characteristics. Such was the case in the zoning of 1958 with the demarcation of five zones (plus demarcation of another single region). The logical rationale for such a method of demarcation is clear, but it contains quite a few conflicts with actual soil conditions in China. Because China's climate has the fine features of rain and heat during the same seasons, but also has temperature zones with which changes in aridity and humidity do not fully coincide, this leads to a series of errors.

In the eastern monsoon region, the temperature zones change with latitude, temperatures declining from south to north, tropics, sub-tropics, warm temperate and temperate zones being from south to north, and stopping at the cool temperate zone latitude. But in China the aridity and humidity situation is one in which the seacoast is humid, and as one moves northwestward, it gradually beomes semi-humid, semi-arid, and extremely arid.

This intermixture of temperature and humidity conditions produces a major impact on the country's soil, vegetation cover, and agriculture and forestry production. North of Chifeng in Hebei Province, for instance, a soil occurs that is both like chestnut soil and also has the characteristics of cinnamon soil, with associated vegetation cover types. As another example, the soils in the southern foothills of the Funiushan and the Nanyang basin are clearly a mixture of southern and northern characteristics. In terms of most recent research data, to say that they possess the characteristics of the relatively dry forest soils of North China mountain regions might be more accurate. Or take southern Xinjiang as an example, where the amount of heat is fine, making it a warm temperate zone where long fiber cotton can be grown, but where there is a shortage of water and where there can be no agriculture without irrigation. Under the aforementioned conditions, it is necessary to consider soil and landscape characteristics together and to conduct concrete analysis in those terms. Therefore, the method of first delineating zones sometimes makes it difficult to outline China's actual soil situations.

Direct use of the method of first demarcating eight great soil zones can resolve some of the aforementioned conflicts. However, yet another situation may arise, namely that this method of dividing regions may place in a subordinate position things that man has yet to bring under control, such as changes in atmospheric temperatures and quantity of heat, thus making difficult a clear explanation of many phenomena. Consequently, in conducting a national soil zoning, a thoroughgoing exploration must be done of the basis for delineating high level categories 2 and 3.

The 1980 mulitple natural zoning that first demarcated three major zones, which were subsequently divided into regions had its desirable qualities. The three major zones outlined the rain and heat occuring in the same season in the eastern monsoon region, and the interplay of seasonal aridity and humidity. In the northwestern arid region, the importance of drought, windblown sand, salinity and alkalinity, and inadequate water in limiting the role of all other natural elements was highlighted. In the southwestern high plateau, the role of high frigidity in limiting productivity was highlighted. Subsequently by demarcating temperature zones for each natural region, the two could be combined to reflect the important differences in China's natural characteristics.

In undertaking national soil zoning, it is necessary, first of all, to make a further painstaking exploration of the problems of divisions within the eastern monsoon region, because eastern China straddles the 50th parallel, is the country's most densely populated area, its most intensively farmed area, and the area in which agricultural production has been going on for the longest period of time. Looked at in terms of soil properties and the

agricultural production situation, it may be clearly divided into two parts: The region to the north and south of the Chang Jiang and the farflung area to the south of the Chang Jiang, which belongs to a hot and humid realm of high temperatures and much rain, has soils with varying degrees of calorization, most of which show reactions ranging from mildly acidic to strongly acidic, and which have fairly clear accumulations of free iron and aluminum. Their natural vegetation cover is that of tropical rainforests, monsoon rainforests, and sub-tropical broadleaf evergreen forests. Mostly paddy rice is planted in an annual two crop system of rice and wheat, or in a between two and three crop system. North of the Chang Jiang, the area is largely a semi-humid to semi-arid one where vegetation cover is broad leaf deciduous forests or mixed forests of needle and broad leaf trees, with xerophytic forests, forests, shrubs, and grasses in the west. The soils are predominantly siallitic weathered ones, and many soils have a high limestone content with accumulations of salts being visible in low-lying areas. Crops are predominantly dryland ones, principally corn and wheat, one crop a year or three crops every 2 years being grown. In the far south two crops a year may be seen, thereby reflecting major differences in some soils.

The Qingling Mountains and the Huai He are a major dividing line between natural regions in China, but formerly their soil zoning was largely placed in a subordinate position. Only in this zoning was the eastern monsoon region of the country divided into two major zones to the north and south of this line, the soils to the south of it having a general character of noticeable iron and aluminum content and called the allite soil (or ferro-allite soil) region, and the soils to the north of it comprising the siallitic soil region.

By the siallitic soil region system is meant the features common to the soils from the warm temperate zone to the temperate zone of North China and most of the Northeast. Under semi-humid and semi-arid conditions, most soils are in a siallitic weathered stage with only a weak free iron being visible, and not yet being in the allite stage. This is greatly different from the soils of the south where varying degrees of allite weathered soils have appeared. Under semi-arid conditions, the accumulation of limestone in soils is apparent, with only partial leaching of the limestone, and calcium layer illuviation. Naturally, in a situation of organic accumulation in soils, differences will be very striking. Such changes require further division into another sub-division.

Yet another dividing line for China's soils and landscape are differences inside and outside the Great Wall. The area along the Great Wall in North China may be roughly divided into two major regions. The region south of the Great Wall has cinnamon soil types characteristic of semi-arid forests. The region north of the Great Wall has chestnut soil types characteristic of arid grasslands. North of the Great Wall one crop a year is grown, the crops being mostly cold tolerant and drought tolerant spring wheat, potatoes, and oats. South of the Great Wall three crops every 2 years are grown, consisting mostly of winter wheat, cotton, and miscellaneous grains other than wheat and rice.

Thus, major differences in the soil and natural landscape are reflected in differences in farm and livestock industry production and the crop system. In general, the Great Wall is the dividing line between the siallitic soil region of the eastern monsoon region and the arid soil area of the northwest.

This dividing line extends westward. In the western part of the northeast and parts of the Nei Mongol high plateau, the black earth and chernozem soil beneath the savannah and grassy plateaus of the northeast region appear, which together with the chestnut soil and brown pedocal soil [brown desert soil] formed by the western grassy plateau mark the dividing line between the two great siallitic and arid soil zones. In the traditional form of zoning, this dividing line continued along the southern extension of the Greater Xing'an Mountain Range. However, there is chernozem distributed on both the eastern and western sides of this line. In dividing soil zones, it is best to follow a demarcation line between chernozem and dark chestnut soils, and chestnut and light chestnut soils. This demarcation line is generally identical with the 250 mm per year rainfall line. Such a demarcation has genuine production significance. In both the quantity of hay they produce and the number of livestock they can maintain, the dark chestnuts soil of the west are noticeably higher; without irrigation facilities it is still possible to engage in dryland farming here though the seasonality of drought is pronounced. However, to the west of this line the chestnut soil and brown pedocal soil regions are part of the arid grassy plateau, which are notably lower in their output of hay and the number of livestock they can support. Moreover, only under warping conditions can grain production be undertaken. This is the reason why there are numerous irrigated areas in the river valleys of the western plateau. Yinchuan and Houtao in the Huang He diversion irrigated area, irrigation through diversion of water through small ditches in the foothills of the Daqing Mountains, and irrigation zones made by diversion of melted snow from the high mountains all belong to these irrigated areas. Consequently, on the basis of the aforestated soil characteristics and the natural landscape features, the northwest arid soil region and the eastern siallitic soil have been divided into two major soil regions.

As far as the question of why high mountain soils should be divided is concerned, we felt that delineation of the first category should be done on the basis of differences in major soil characteristics. The Qinghai-Tibet Plateau is a large, high plateau at a low latitude and a high elevation above sea level within China. Its soils and its landscape features are greatly different from those of surrounding regions at lower altitudes above sea level.

Since the late Tertiary Period and throughout the Quaternary Period, the surface of the high plateau has steadily risen, and this has produced extremely great effects on natural conditions on the plateau and on its neighboring areas, making it a unique natural region in China, the soils and other natural conditions of which are very different than those of regions at lower latitudes and lower elevations above sea level.

Since the surface of the plateau is mostly around 4,000 meters above sea level or higher, the mountain systems on it are at even higher elevations. At different elevations above sea level (3,700 meters, 4,300 meters, and 5,200 meters) on the high plateau, soil and farming and livestock raising conditions have rather distinctive characteristics. The usual alpine conceptions do not entirely apply. This is because most isolated mountain peaks at such high elevations are on the ice and snow line, while on the Qinghai-Tibet Plateau, alpine grasslands, semi-alpine grasslands, and grasslands exist. Upper limits for the growing of crops may be above 4,300 meters. On the top of the plateau or in ravines fairly high above sea level grow highland barley, wheat or even fruit trees, and vegetables. These distinctive characteristics are closely interrelated to soil properties.

As a result of the uplifting of the Qinghai-Tibet Plateau and the effects associatied with it, new structural movement is extremely developed resulting in the formation of many large and high mountain systems related to the Qinghai-Tibet high plateau, which cause China to be characterized by many mountains. The area of mountains and hills is more than 65 percent of the total.

In the high mountain systems, vertical differentiation of soils and vegetation cover are apparent. Below the snow line are found cold desert soil, alpine meadow soil and semi-alpine meadow soil. The surface of the high plateau is broad and under overall high and cold conditions, and as a result of differences in aridity and humidity, differences occur in the horizontal plane of the high plateau. Differences in soil patterns resulting from the combination of vertical and horizontal differences produce special soil combinations.

This is the reason for including the alpine soils distributed on the Qinghai-Tibet high plateau as a part of the first great soil category. However, futher analysis is still required for specific delineation. For example, the red earth and yellow earth distributed at a low elevation above sea level on the south side of the Qinghai-Tibet Plateau, and the soil verticle spectrum on it, differ fairly greatly from the soils on the surface of the high plateau. For this reason, in zoning soil, they are classed in a great soil zone with the red earth of the Yunnan high plateau. The elevation above sea level of the Tsaidam Basin in the northwestern part of the high plateau is also very high; however, properties of its soils are akin to those of the northwestern arid soil area, so they are classed in the northwest arid soil zone. Thus after separating out the red and yellow earths at low elevations in the south and the Tsaidam Basin in the north, it is the high and cold features of Qinghai-Tibet high plateau soil that are noticeable. These soils are characterized as having a high underlayment and fierce sunshine, and though their elevation above sea level is high, farming and livestock raising can still be carried out at low latitudes and below high elevations. Therefore, among first category soil regions, neither the system of division into eight major regions nor the system of demarcation by zone was used, but rather three high level categories were divided into four great soil regions as follows:

(1) Allitic Great Soil Region (or Ferro-allitic Great Soil Region).

(2) Siallitic Great Soil Region

(3) Arid Great Soil Region

(4) Alpine Great Soil Region

2. Delineation of Soil Zones

China is situated in the eastern part of the Eurasian continent, and extends from the Zengmu reef in the Nansha Archipelago [Spratly Islands] in the south to the Mo He in Heilongjiang Province in the north covering an area of more than 50 degrees of latitude.

In the course of evolution over a long period of time, diverse soils and natural landscapes have been formed that are suited to the growing of many kinds of plants and crops. Because of differences in moisture conditions and rises and falls in the topography of the temperate zone, the soils that have been formed differ widely. Therefore, delineation of soil zones should occupy a proper position in soil zoning.

The foregoing discussed the overemphasis on soil zonality, or what has been called bioclimatic zonality in former soil zoning, with may phenomena that could not be readily included. Nevertheless, one cannot completely ignore the delineation of soil zones on this account. Consequently, soil zones are a part of the secondary category zones. The basis for their delineation is principally the compatability of temperature zones with soil and vegetation cover. Other influences on soil characteristics and combinations of factors are distinguished in corresponding scales.

Differences in soil properties corresponding to temperature zones exhibit laws of change that generally parallel latitude in the eastern monsoon region, moving from south to north. In the northwestern arid soil region, changes occur somewhat on a slant, largely showing a differentiation from the southeast to the northwest. Soil evolution on the Qinghai-Tibet Plateau is also similar to that of the northwest arid region, aridity gradually increasing from the southest to the northwest. Therefore, in the demarcation of China's soils, three alignments appear.

The eastern monsoon region was formerly divided into tropical, semi-tropical, warm temperate, temperate, and cold temperate zones. Most recently, acting on the basis of a summarization of the growing of rubber and other tropical ecomonic forest woods in China's southern semi-tropics and tropics, taken together with actual differentiations in temperature zones, the tropics has been divided into poriferal tropics, medium tropics, and equatorial tropics zones. Their distinctions are that in the southern semi-tropical zone, only under partial microclimatic conditions is it possible to grow rubber. In the zone ferro-allite soils of the poriferal tropic zone in the northern part of Hainan Island and on the Leizhou Peninsula, rubber can be grown; it is, however, subject to cold damage, and its speed of growth is not as good as

in southern Hainan Island. Therefore, in zoning soils, the latosol soil of the former tropic zone has to be divided into fringe tropic zone latosol, medium tropic zone latosol, and equatorial zone soil. The latter is principally the phospho-calcic soil of the various islands of the South China Sea. These have been temporarily lumped into the latosol soil zone for lack of complete data. Each soil zone includes various individual soil belts.

(1) Allitic Great Soil Region. Divided into three soil belts from south to north.

1. Latosol Soil Zone. Includes the area south of the Nan Range, coastal Fujian, and most of northern and central Taiwan Province. Distributed largely as paddy soil, two to three crops may be grown. Longans and lichees are produced on it, as well as bananas in many places.

2. Red earth and yellow earth zone. This is the widest zone of medium and semi-tropical soil in the country including the area of low mountains and hills between Jiangnan and the Nan Range as well as the Sichuan Basin and the Guizhou Plateau. The northern part of the Yunnan Plain is also a part of it. It is a prolific producer of paddy rice and bamboo. One to two crops of paddy rice may be produced annually. Many places also produce citrus fruits, tea, and tea oil.

3. Yellow-brown earth zone. Mostly along the mid and lower reaches of the Chang Jiang and in the Han Shui basin. It is a weakly weathered allitic soil. It grows mostly paddy rice and wheat in a two crop system. In some places, where microclimatic conditions permit, citrus and tea may be grown.

(2) Siallitic Great Soil Region. Divided into three zones from south to north.

1. Brown earth, cinnamon soil and dark loessal soil zone. This is an eastern warm temperate zone soil that is also fairly widespread in China. It includes most of North China and the loess highlands, a semi-moist to semi-arid area. Prolific producer of cotton, wheat, barley and naked barley, and miscellaneous grains other than wheat and rice, two crops per year or three crops every 2 years being possible. It is a major producing area for juicy fruits and dry fruits [e.g. nuts]. In the western part of the loess highlands, soil erosion is fairly serious, limiting development of agricultural production.

2. Dark brown earth, phaiozem, and chernozem zone. These are the principal soils of the eastern part of China's temperate zone. Under semi-moist or semi-arid conditions, the four seasons are distinct. Winters are exceedingly cold, but summers are warm enough to satisfy growth of crops that like coolness. A single crop a year can be grown, and crops include spring wheat potatoes, and sugarbeets, which grow well. Corn and paddy rice may also be grown, but they are prone to cold damage.

3. Podzolic soil zone. Found in a narrow area of China, only at the northern end of the Greater Xing'an Range. Mostly mixed growth of needle and broad leaf forest trees such as larch, white birch, and Pinus sylvestris.

(3) Arid great soil region. Divided into three zones.

1. The kastanozem, brown pedocal, and sierozem zone. An extension of the aforementioned dark brown earth, phaiozem, and chernozem zone of northeastern China, which becomes the kastanozem of the grasslands and the brown pedocal zone of the semi-desert grasslands where short artemesic plants grow, and which is interconnected with the sierozem soil of the semi-desert grasslands at the southern end. The livestock raising industry predominates in these arid grasslands, largely cattle and sheep in the east and goats and camels in the west.

2. Gray-brown desert soil zone. Dovetails with the brown pedocal in the east and extends into the mid-temperate zone desert region with much aeolian arenosol. In the east lies the Tenggeli Desert, and in the west lies the Badanjilin Desert. In the Dzungarian Basin is the Guerbantonggute Desert. There are many irrigated areas below the Tian Shan and the Aerqin Shan.

3. Brown desert soil zone. This centers around the southern part of Xinjiang Province, which is the drought center of the Eurasian continent. From the Hexi Corridor in Gansu westward, it becomes increasingly arid until the center of the Tarim Basin in which lies the vast Takla Makan Desert. Annual rainfall is only 20 to 50 millimeters. As a result of irrigation and many oases made possible by melted snow from the Tian Shan and the Kunlun Shan, long fiber cotton and winter wheat is grown here.

(4) Alpine Great Soil Region. This means mostly the soil on the Qinghai-Tibet Plateau at an altitude above 4,000 meters. Since the plain extends rather widely, it has been divided into five soil zones.

1. Sub-alpine meadow soil zone. Located in the relatively moist southeastern part of Tibet where conditions are fairly good, making it a farming and livestock raising area.

2. Sub-alpine steppe soil zone. Distributed mostly on the north side of the Yarlong Zangbo Valley, which is the main farming and livestock raising region of the Tibetan Plateau.

3. Alpine meadow soil zone. Located mostly around the headwaters of the Yalong, Jinsha, and Lancang rivers, where the terrain is uplifted and the livestock industry predominates.

4. Alpine steppe soil zone. Located mostly on the northern part of the Tibetan Plateau where the terrain is uplifted and where there are many salt lakes. Some livestock raising.

5. Alpine desert soil zone. Connected in the north to the Tsaidam Basin and in the west to the southern Xinjiang Desert. Part of alpine desert steppe.

III. Delineation of Soil Zones

Soil zones are an important element of national soil zoning. They reflect the homogenity of soil make-up and related conditions within zones as well as the generalness of their use and improvement characteristics.

However, such homogenity or similarity of soil combinations applies to broad areas. When zoning soils in provinces or counties, it is still necessary to continue to make fine distinctions. Take the Huang-Huai Plain as an example. This is a self-contained soil zone unit within the brown earth and cinnamon soil zone. But within the zone, differentiations of soils are still very obvious. Cinnamon soil is found only in alluvial fans at the foot of mountains and in places on the plain where the ground water table is fairly deep. The broad plain may continue to be divided into the North China Plain north of the Huang He, and the Huangfan Plain to the south of the Huang He where fluvo-aquic and saline-alkaline soils predominate. At the southernmost end of the Huang-Huai Plain, sajong black soils predominate.

Take the North China Plain as another example. It may be finely divided into piedmont alluvial fan fluvo-aquic brown soil, alluvial plain fluvo-aquic soil, saline-alkaline soil, and saline coastal soil. These subdivisions below soil region are of reference value for soil improvement and use.

In undertaking a zoning of national soil regions, the basic characteristics of broad soil regions must be delineated to make individual units in soil regions distinct. Soil combinations with identical or similar characteristics should be grouped together, and those with obviously different characteristics should be separated out. Illustrative examples are given as follows:

Example 1. Traditionally when discussing the loess highlands, the region of Shanxi, Shaanxi, and Gansu to the west of the Taihang Mountains is collectively called the loess highlands. Thus, because the extent of the loess highlands is overly large, when discussing soil improvement and water and soil conservation in the loess highlands, endless debate results from the object of discussion not being the same. One must know that the Yan Shan rise in the north, and that the Taihang and Luliang mountain system than extends to the south is a mountain area of soil and rock. Though there are also loess accumulations in the ravines and valleys of rocky mountain lands here, its characteristics differ rather greatly from the loess mesas, ridges and hills to the west of the Luliang Mountains. Therefore, if the loess highlands are delimited in a small sense, only the region where the less soil layer is deep (averaging between 30 and 280 meters), erosion is serious, and which is cut up into rounded hills, loess ridges and loess mesas is meant. This is a region where vegetation cover is sparse, consisting mostly of grasses, and is called the loess highland loessal soil and dark loessal soil area. The soil and rocky mountain area to the east, on the other hand, is called the North China mountainland brown soil, skeletal cinnamon soil, mountain brown earth zone, which is the principal area for the growing of fresh and dry fruits such as Chinese chestnuts, walnuts, apricots, and persimmons. Here the valleys and basins are major agricultural areas. But the large river valley plains form yet another soil region.

In the two aforementioned soil regions, soil make-up is different, and distinctions in their use and improvement are also fairly great.

Large river valley plains such as the Fen He and Wei He river valley plains as well as the various forms of land on their banks such as the first, second, and third grade mesas, have been substantially uneroded or only slightly eroded. Agricultural production there is consistent, and it is a farming area with consistently high yields. It differs greatly from the loessland highlands, which have been badly eroded. Thus it requires delineation as a soil area called the Fen and Wei valley fluvo-aquic soil, cumulative cinnamon and cinnamon soil region.

Therefore, the soil region that had formerly been lumped together under the term "loess highlands," has now been defined as the North China mountainland, the loess highlands, and the valleys of the Fen and Wei. In this way soil region concepts are clarified, so that discussion about the direction of improvement and use of different soil regions will have a clear orientation.

Example 2: In the division of soil zones in the Sichuan Basin, should the Sichuan Basin be maintained as an entity when zoning the soil in such a large basin? Or should it be divided up in a suitable way while retaining its general outlines. This merits exploration.

We have divided lowland areas of the Sichuan Basin into the Chengdu Plain paddy soil region and the Sichuan Basin purplish soil and paddy soil regions. As to just how to distinguish the mountain regions of eastern Sichuan and the mountains surrounding the Sichuan Basin is also a question meriting deep study. The Huayong and Jinyun mountainlands of eastern Sichuan have mostly yellow earth, but their valleys also contain much purplish soil distributed in high hills, which is very much the same as that of the purplish soil hill area of eastern Sichuan, and which should be made a sub-category of that region. However, a comparison of the mountains surrounding Sichuan with the Guizhou Plateau shows their soil properties and landscape characteristics to be virtually identical. Thus, the mountains surrounding Sichuan and the Guizhou Plateau can be grouped together as a single soil region in which yellow earth, rendzina, and paddy soil predominate. Since soil properties of the Kunming Plateau and the Guizhou Plateau distinctly differ, they cannot be lumped together as the Yunnan-Guizhou Plateau, but should be divided into two soil regions.

Example 3. The vast expanse of mountains and hills to the south of the Chang Jiang form a major part of China's semi-tropics. They cover a vast area in which natural conditions are very good, making them major areas for the development of agriculture and forestry. Formerly it was customary to refer to them collectively as the Jiangnan hills, when, in fact, mountainlands account for a substantial area. The make-up of the soil of the rolling hill regions and the folded mountains, as well as their use and improvements differ fairly greatly. Consequently, this vast region has first been broken up into the Jiangnan hill red earth and paddy soil region, which comprises mostly Hunan and Jiangxi, but also extends eastward into the Red Basin in Qu County, Jinhua Prefecture, in Zhejiang Province. In landforms,

mother material, and soil make-up, this Red Basin greatly resembles the adjacent region, so it is classed as a single soil region. Additionally identified are the Jiangnan mountainland red earth, yellow earth, and paddy soil regions including the north slope of the Nan Range, the mountainlands of Fujian and Shejiang, and the mountainlands of southern Anhui and northern Jiangxi. The hill soil regions south of the Chang Jiang are at a low elevation above sea level and the slope of the terrain is fairly gentle. They are a major farming area requiring attention to improvement of the red earth. The mountainlands south of the Chang Jiang are at a fairly high elevation, most mountains below 1,000 meters. They are characterized by extremely well developed interspersed large and small mountain basins, each of the basins traversed by streams, with mostly wetlands in the middle of the basins and terraces climbing the sides of streams. The soil is largely red earth. High hills and low mountains are mostly red earth and yellow earth, largely covered with common broad leaf forests. These basins are major producing areas for bamboo, wood, and economic trees such as tea oil, tung oil, and citrus fruit. In ravines and along mountain slopes of varying heights where water is adequate, one finds terraced fields where rice is grown. They serve as fine bases for multiple kinds of farming. Of course, provincial and county level zoning has not been carefully done.

Example 4. In China'a northwestern arid region, mostly various kinds of desert soils are found. The arid region has several large basins including the Tarim and the Dzungarian, plus the Hexi Corridor. These basins and their surrouding mountainlands form a self-contained natural system. Their soils and other features have yet to be carefully delineated. In the center of the basins are vast arid deserts such as the Takla Makan Desert and the salt lakes to the east of it in southern Xinjiang. Mountains surround the basins. Take the Tian Shan, for example. It has brown pedocal soil, chestnut soil, and even black desert soil, which is distributed in a vertical spectrum as the mountains rise. At the forest line, one sees gray cinnamon forest soil. The melting of ice and snow in the high mountains forms the source of irrigation water for oases in the basins. Thus, three distinct soil areas are formed: (1) the Tarim Basin, Lop Nor brown desert soil and aeolian arenosol region, (2) the Tarim Basin fringe irrigated cumulative soil, brown desert soil, and saline soil region; and the (3) Tian Shan gray-brown soil and semi-alpine meadow soil area.

The foregoing examples demonstrate the existence of broad regional soil region concepts in the zoning of soils. Insofar as possible, soils are grouped together in the same soil region on the basis of their similarities in make-up, and thus the soil make-up of one soil region and another is clearly differentiated making for easy identification. All graduations of fairly small distinctions have been identified in the scale for different regions provided below. In national terms, soil regions should not be divided up too finely or into too many sub-regions. For example the Altai Shan gray forest soil, semi-alpine meadow soil region is a soil region formed from the combination of several discontinuous soil tracts containing soil with similar properties. The Tarim Basin fringe irrigated cumulative soil, brown desert soil, and saline soil region is a similar situation. In formulating agricultural production plans, measures can be adopted on the basis of differences and similarities between one soil region and another.

9432
CSO: 4007/524

ZHOU ZIJIAN VISITS, REASSURES COMMUNE MEMBER

OW041351 Hefei Anhui Provincial Service in Mandarin 1100 GMT 3 Aug 82

[Newsletter by station correspondent (Ye Shihe): "The Governor Makes Us Feel Reassured"]

[Excerpts] Zhou Zijian, acting first secretary of the Anhui Provincial CCP Committee and governor of Anhui, inspected Jingde County in mid-June. After a briefing by county and commune leaders, he paid a visit to (Lu Jinsheng), a commune member of the (Fengxi) No 4 production team of (Niaoshou) commune, despite the rain. He encouraged (Lu Jinsheng) to vigorously develop production and get rich through work as quickly as possible.

(Lu Jinsheng's) family consists of six members, three of whom are able-bodied workers. (Lu Jinsheng) himself is a hardworking and capable man. He has been a production team leader for more than 20 years. He is good at farming and diversified undertakings. In addition to 7.5 mu of land which the family farms under contract, the family also grows ramie and keeps sows and cattle. The family's annual income from farming and sideline production may go as high as 3,500 yuan, averaging 600 yuan per person.

Seeing the fine ramie crop at (Lu Jinsheng's) home, Comrade Zhou Zijian said happily: Your ramie is very good.

(Lu Jinsheng) said what he had wanted to say for a long time: Every family here grows ramie. It is a major sideline production and source of income. However, the commune members are afraid that the policy might change and that they could be stuck with their unsold ramie.

Comrade Zhou Zijang said: The state is going to set up a ramie mill. When that happens, there will not be enough ramie to meet demands.

(Lu Jinsheng) said: That is good. We are reassured.

CSO: 4007/537

BRIEFS

TEA PROCUREMENT--By 10 July, Anhui had procured 616,000 dan of tea from tea growers, thus overfulfilling this year's state procurement plan by 4.5 percent. The 1982 procurement is 95,000 dan more than the 1981 procurement. [OW060130 Hefei Anhui Provincial Service in Mandarin 1100 GMT 16 Jul 82 OW]

ANQING PREFECTURE EARLY RICE--Anhui's Anqing Prefecture has reaped a bumper harvest from its 2.53 million mu of early rice fields, with per-mu yield reaching 750 jin and total yield 1.9 billion jin. [OW140351 Hefei Anhui Provincial Service in Mandarin 1100 GMT 13 Aug 82 OW]

GUZHEN COUNTY AGRICULTURAL PRODUCTION--Guzhen County in Anhui has increased its total annual grain output from 237 million jin to 554 million jin in 3 years since the convening of the 3d Plenary Session of the 11th Party Central Committee. The total income derived from agricultural production achieved an annual increase of 22 percent in both 1979 and 1980 and reached 183 million yuan in 1981, more than double that of 1980. The county's total wheat output has reached 285 million jin, 35 percent more than last year. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 12 Aug 82 OW]

ECONOMIC DEVELOPMENT--According to a report submitted by Anhui's vice governor Guo Qiziang on 17 July 1982 to the 14th meeting of the Standing Committee of the Fifth Anhui Provincial People's Congress, the total output of summer grain is expected to reach 10.26 billion jin and that of rapeseed is expected to reach 17.46 million dan in the province. The total industrial output value for the first 6 months of 1982 has reached 6.95 billion yuan in Anhui, fulfilling 49.6 percent of the annual target assigned by the state. By the end of June 1982, 1,397 million jin of summer grain, 400,000 dan of spring tea and 56,000 dan of spring silk cocoons had been procured by the state. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 20 Jul 82 OW]

RICE HARVEST--Despite incessant rains 9-24 July, which brought 300 to 400 mm of water to the rice fields, Anhui Province had, by 6 August, harvested 10 million mu of early rice, or 90 percent of the total to be harvested, while planting 8 million mu of late rice. [OW100505 Hefei Anhui Provincial Service in Mandarin 1100 GMT 9 Aug 82 OW]

CSO: 4007/537

PLANNED PARENTHOOD STRESSED UNDER RESPONSIBILITY SYSTEMS

Beujing RENKOU YANJIU [POPULATION RESEARCH] in Chinese No 3, 1982 pp 30-32

[Article by Xiao Sanhua [5618 0005 5478] of the Population Institute of the Guangdong Province Academy of Social Sciences: "How Planned Parenthood Work Should be Carried out After Implementation of Production Responsibility Systems in the Rural Areas"]

[Text] After the Third Plenum of the 11th Party Central Committee, rural production systems were transferred to lower levels and a variety of production responsibility systems were implemented in rural areas, breaking new paths for resolving a situation in which rural production had become bogged down. But after the systems were transferred to a lower level, a rise in the natural population increase appeared in rural areas. How can this new problem which has arisen under new circumstances be resolved? This is the subject of this article.

I. Responsibility systems, such as occupational contracts or household production contracts to labor, which link compensation to production, are an important part of the distrubiton by work system. This is particularly evident in improving the lot of poor and backward units.

However, things have a tendency to develop in complex and interrelated ways. After the responsibility system for household contracts was shifted to labor, the phenomenon of no one being in charge of planned parenthood appeared in rural areas; this produced an anarchic attitude regarding childbearing and the birth rate started to rise again. After the system was changed, the work point compensation system below the production brigade level was completely abolished. The past regulation of discounting the labor work points earned by a couple with too many children was hard to enforce. In some places, when responsibility for land was allocated under the system of contracting to the household, it was stipulated that those with too many children should receive less land for which they were responsible, but in places with little population and a lot of land there was no problem about giving less land. In some places where incomes were high, the household concerned didn't even mind the levying of fines for excess children.

Such problems appear to be obstacles which were created after the implementation of the responsibility system, but actually this outlook is a little one-sided.

Marxism holds that population production is in the sphere of social production and is restricted by the methods of social production. The level of a society's economic development based on a certain level of productive forces determines the state and scale of the population growth of the society. At present, China's rural economy still retains animals as motive power; with a level of agricultural production forces consisting largely of hand labor, in which machinery has not yet replaced human labor for cultivation, the peasant family is the production unit and the amount of economic income is determined by the strength of the labor force. In addition, due to the relatively low standard of living, the cost of raising children is low, and since the technical demands of agriculture are not high, expenses for educating children are not great. This extremely low level of agricultural production is reflected in childbearing, which is high. As a result, the production responsibility systems in the rural areas, after it is implemented, cannot be expected to play any determining role in changing the birth rate.

However, the view of childbearing which proceeds from the individual interests of the small rural economic unit can, through socialist propaganda and education, administrative measures, economic rewards and punishment, under the premise of the primacy of state and collective interests, through planned parenthood, be changed so as to control the reckless growth of population. In the past 10 and more years, planned parenthood work has made enormous achievements sufficient to prove the point. Since the seventies, when we began to stress planned parenthood, the natural population growth rate for the entire country dropped from 12.72 per thousand in 1976 to 11.7 per thousand in 1979, which is lower than the 17 per thousand level for natural population growth worldwide for the same period. Rural natural population growth rate for the entire nation dropped from 24.29 per thousand in 1971 to 12 per thousand in 1979. The planned parenthood rate went from 10 percent in 1971 to 70 percent in 1979. The birth rate of 33.59 per thousand for the entire country in 1970 dropped to 17.90 per thousand in 1979, or 56 million fewer births nationwide, which is equal to giving birth to fewer people than the entire population of Guangdong Province. Thus, transferring agricultural production systems to lower levels and doing a good job of rural planned parenthood is entirely possible. The crux of the problem which appeared earlier was that our commune and brigade cadres and masses relaxed planned parenthood work. For a time right after a change in a system on policy we should not be surprised at some ideological problems in society. If only we strengthen study, raise understanding, establish policies well, do a good job of propaganda education among the masses, strengthen the ranks and lead the masses, planned parenthood work can be done well.

II. How should we carry out planned parenthood work in this new situation? Practice in many areas proves that it is necessary first of all to resolve the key problems. The Central Committee said: Rural areas generally should advocate one child, stop at two and not have a third, and this is completely correct. It conforms both to national circumstances and the will of the people, and it should be firmly carried out. Whether from theory or from method, "not having a third child" is much easier than having one child and stopping at two. Today (i.e., 1981) the excess births in many provinces nationwide is 30 percent or more (Yunnan, 30 percent; Hebei, 30 percent;

Guangdong last year 30 percent). The nationwide multiple birth rate is still 20 percent. If we stop multiple births and other things remain the same, the natural population growth rate may drop to below 8 per thousand. In the past some people said: "I'm a citizen of China. Other people have multiple births, why can't I have one more?" Some people were clearly ready to have only one, but because they were influenced by others having more children, they gave up the idea of having only one, so the influence of this thinking was very great. Not having a third child is a matter which planned parenthood work should address first of all, for this is a strategic measure.

Next, it is necessary to clearly stipulate the scope of the"stop at two children" policy so that "not having a third" will not go so far as to produce the misunderstanding of whether or not one can have a second child. In the spirit of the directives of the CCP Central Committee and the State Council, for those rural areas where the masses demand a second child because they are really having problems, after investigation and the implementation of planning arrangements, contracts should be signed with the women of childbearing age. In this way the limitations of the "stop at two children" policy will be specific and clear, and this will establish a firm foundation for stressing "stop at two children" work.

III. Marxism holds that the production of material goods must adapt to the production of mankind itself. Resolving our population problem requires that we stress the two kinds of production together. After the implementation of responsibility systems which link compensation to production, the advanced units in planned parenthood in Pingshi Commune in Lechang County, Nankou Commune in Nei County and Gaoyao County (all in Guangdong) established models of how to improve planned parenthood work. Their method was to make both agricultural production and planned parenthood part of the responsibility system so that the method of "stressing both kinds of production together" was further well grounded. Specifically, the "stress food, money and people together" program should be implemented. When the work group or household giving guarantees signs a "dual guarantee" contract with the production brigade, it guarantees agricultural quotas and planned parenthood quotas together. A person's parenthood quota is set by the work group and carried out by the individual. Cadres, masses and individuals all know who should have a child and who should not have another child, and this plays a supervisory and restrictive role. The work group must certify to the production brigade that it carried out the parenthood norms and that it did not have any excess births outside of the planning.

The "dual guarantee" contract also stipulates the joint checking and fixing of rewards and punishment. If the production and parenthood quotas are both met, then the entire bonus is received: 70 percent for agricultural production and 30 percent for planned parenthood. If the agricultural production mission is completed but planned parenthood is not, then only 70 percent of the bonus is given. At the same time, the production brigade stipulates that if there are excess births outside of the plan, then an excess birth ration will be deducted from the total grain ration of the commune members of the entire group, and this further links planned parenthood to the personal interests of each commune member. The commune and the brigade also adopt the

deduction-by-level method with regard to the brigade and the production brigade respectively; one level deducts from the next lower so that the levels are closely linked. This causes people to be concerned about each other and the cadres and masses manage in tandem so that the "dual guarantee" system is well established. The commune, brigade, production brigade and work group (household) all give guarantees to the level above them regarding a double heavy mission. The two quotas are assigned together at the beginning of the year, checked at midyear together and reported together; at the end of the year they are summarized together and evaluated together. This makes planned parenthood work regularized and systematized.

In the past, planned parenthood work was always of a crisis nature: during the high tide activity was furious, but as soon as the high tide passed it cooled off, so the results fell short. Because it implemented the "dual guarantee" and as a result of evident achievements in the "stress food, money and people together" program, Nankou Commune in Mei County was declared an advanced county unit. In 1980 the birth rate was 15.1 per thousand, the natural population growth was 9.2 per thousand, the multiple birth rate was 2.1 percent, and there were 11 brigades which did not have third births, so the population was better controlled. After Pingshi Commune implemented the "dual guarantee" contract system, there were great developments in agriculture, forestry, animal husbandry and sideline production, and superior results in planned parenthood work, too. At the end of last year the natural population growth rate was 3.66 per thousand, the planned birth rate was 84.9 percent, and the late marriage rate reached 96.3 percent. In the first quarter of this year the single-child birth rate increased from last year's 77.4 percent to 94.4 percent, and 10 of the 16 brigades in the entire commune achieved 100 percent in the single-child birth rate. Of the 150 production brigades in the commune, 129 did not have a third birth.

To summarize, after implementing household guarantees or some other responsibility system which links compensation to production in rural areas, the following are the main methods of doing a good job of planned parenthood work:

1. Leadership thinking and understanding should be unified, and party members and cadres should take the lead by setting an example. For example, in Huilong Commune in Gaoyao County, the cadres advocated that each couple have only one child, but they ran into heavy resistance so it was very hard to launch the campaign. After the commune cadres launched a campaign to study relevant population theory, the relationship between population and the four modernizations and the Open Letter from the Central Committee, they raised their understanding, unified their thinking and resolutely took the lead in having only one child, and this played a very good role in planned parenthood work. Because the commune cadres all received single-child certificates, one level spurred on another, the leadership spurred on the masses and very quickly this promoted a high tide of having only one child throughout the commune. There is a saying: "The village looks to the village, the household looks to the household, the commune members look to the cadres and the party members look to the party branch." It is necessary to emphasize that "the cadres should do first what is demanded of the masses; and the cadres

"within the party should do first what is demanded of the cadres." The Central Committee's Open Letter demands that party and league members and cadres take the lead by setting an example.

2. Propaganda and education work should be launched vigorously and a careful job of ideological work should be carried out. China has a several thousand year history of feudal society, and feudal influences on marriage and childbirth are very profound in the rural areas; the feudal ideas that "the more children, the more happiness" and "boys are honored, girls are inferior" are deeply rooted in the rural areas. Advocating having only one child can meet stiff resistance. Having only one child is an ideological revolution in transforming social customs. Gaoyao County's ideological education work adopted the unity of theory and practice; using materials on hand by settling balances helped the masses easily to comprehend the principles and get a real life education with very good results. The cadres guided the masses to calculate three accounts: the disadvantages of the increased burden on the state, the collective and the family of reckless population growth, the advantages of planned population growth; and the economics of a couple having only one child; they showed that keeping the population under 1.2 billion is related to the future of the peoples of the country, the happiness of future generations and the integration of long-range interests and immediate interest, state interests and individual interests. Through account balancing education the county's single-child rate rose from 7.8 percent in 1979 to 47.6 percent last year; 168 units in the county reached a single-child rate of 100 percent.

3. Do a good job regarding policy and implement bonuses and fines. There are seven relevant stipulations in the Guangdong Planned Parenthood Regulations which provide for bonuses for those who have only one child. To the extent possible, brigade and production brigades should make supplementary stipulations which provide for a variety of consideration so that visible immediate benefits will be received. This not only broadens the impace of single births, but also further establishes a solid foundation for the single-child rate. On the other hand, there are economic penalties (work points cannot be deducted, so fines are used) for multiple births or unplanned births to be used for education in implementing the policy of bonsues and fines, and this plays a great role in stopping additional births. For example, Pingshi Commune adopted economic measures, implemented a bonus and fine policy, carried out a mass pledge and implemented measures to increase bonuses and fines to make the policy work. From January to April of this year there were 232 instances of the four procedures (including 60 induced abortions, 35 ligations of men and women and 142 ring emplacements), so that the rate of single births rose from last year's low, 77.4 percent, to 94.9 percent.

4. A staunch and stable planned parenthood work corps should be established. Since responsibility systems linking compensation to production and "dual guarantee" contracts have been implemented, advanced units have turned around the passive situation of the past and have established a specialized corps responsible for day-to-day work. Brigades and production brigades have also alerted women leaders and barefoot doctors that when, in the process of carrying out routine examinations, a pregnancy which is outside of the plan is

discovered, they are to report it immediately and take precautionary measures promptly. Occupational brigades have duties and rights to provide extra allowances. They should keep their minds on their work, have clearcut responsibilities and play an important role.

5. The down-to-earth work of birth control measures should becarried out after a certificate is secured. The age of parents of a single child securing a certificate is usually between 25 and 30. After securing their certificate, to guarantee that they do not have any excess births, long-term measures should be taken. Ordinarily, ideological education should continue along with regular examinations so that there are no excess births.

In summary, the fact that the birth rate began to rise again after the rural production responsibility systems were transferred to lower levels was not due entirely to the responsibility systems, but was caused by the fact that the cadres and masses were not clear in their thinking and became too lax in their work. After many communes and brigades combined responsibility systems, carried out "dual guarantees," and "stressed food, money and people together," obvious results were achieved. In the future, thinking should be unified, policy should be unified, cadres should take the lead, measures should be established, propaganda should be carried out well, and policies should be honored to regularize and systematize planned parenthood work so that population control work can be done well.

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CSO: 4007/442

USE OF ECONOMIC CONTRACT LAW URGED IN AGRICULTURAL CONTRACTS

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 5, 1982 pp 17-18

[Article by Li Yuanhe [2621 3293 0735]: "Study Economic Contract Law as a Means To Improve the Agricultural Production Contract System"]

[Text] The "Economic Contract Law of the People's Republic of China," passed by the Fourth Session of the Fifth National People's Congress, covers economic contracts signed by legal entities in China, and supplementary articles state: "Economic contracts concluded between individual enterprises and rural commune members and legal entities should be executed with reference to this law." Agricultural production contracts are economic contracts concluded between rural commune members and legal entities (production brigades) and should be honored with reference to the relevant stipulations of the Economic Contract Law. On the basis of the actual practice of the agricultural production contract system in force in Gansu, I would like to discuss some preliminary views and opinions on executing [contracts] with reference to the Economic Contract Law.

On Concluding Contracts

First of all, it is necessary to understand the basic principles which must be observed in concluding a contract and clarify the boundaries between a valid contract an an invalid contract. The Economic Contract Law stipulates that an economic contract concluded between legal entities must: 1) "obey state law and conform to the demands of national policy and planning; and 2) "follow the principles of equality and mutual benefit, negotiated agreement, and equal value compensation." On the other hand, "contracts which violate the laws, policies and planning of the state," "contracts which are concluded by deception or coercion," and "economic contracts which run counter to the national interests or the common interests of society" are invalid economic contracts and are not legally binding. Presently concluded agricultural production contracts must emphasize the following: 1) The unchangeability of the collective ownership of the basic means of production must be upheld. Land and other basic means of production of the contracting group, laborer, or household belong to the production unit, and the contractor is not permitted to buy or sell, rent, mortgage, allow to lie fallow, built on or use this land for graves. 2) The national interests and the common interests of

society must be protected. National resources and the collective resources of neighboring communes and brigades may not be used as a unit's resource and contracted to commune members. Damage to state resources or to the collective economic interests of neighboring units through managing contract production is not permitted. 3) There must be conformity with the demands of the national plan. Contracts are to be concluded in accordance with the direct quotas and guideline quotas handed down by the state, integrated with the unit's actual circumstances and implemented concretely by group, laborer and household. 4) The rights, responsibilities and benefits to both sides must be negotiated in order to achieve agreement through thorough discussion by production brigade commune members and the masses.

Next, the important provisions which the agricultural production contract should have should be made clear. Regarding the important provisions which the Economic Contract Law stipulates an economic contract concluded between legal entities should have, the agricultural production contract generally should contain provisions concerning the following: 1) the contract quantity and usage demand for important means of production, such as land, draft animals and machinery and tools; 2) the contract production plan, output and income; 3) the method of distributing commodities and income, and stipulations on bonuses and penalties, time limits and methods for completing the state mission and the collective's retained share; 4) nonfulfillment by either party of its economic responsibility under the contract; 5) discussion by both parties of any other provisions that must be fulfilled.

Third, the various types of contracts and agreements should be conscientiously concluded. The contract must conform to principle, the content must be complete, the stipulations must be specific, the responsibilities must be clear, and every effort must be made to make it easy to carry out. There should be three copies of the contract: the production brigade and the contracting unit should each get one copy and one copy is to be sent to the brigade.

On Honoring the Agreement

The Economic Contract Law stipulates that an economic contract between legal entities "is established according to law, i.e., it has the force of law and the entities involved must either completely honor or terminate the contract." This stipulation completely fits the agricultural production contract. The group, laborer or household which is the contracting unit must use the basic means of production, establish a production plan, perform the production contracted and complete the mission to be handed over to the state and that to be retained by the collective in accordance with the demands of the contract. The production unit which receives the guarantees must supply the basic means of production for the contracted units in accordance with the requirements of the contract. Both parties must meet all the commitments stipulated in the contract; they cannot avoid the difficult parts and carry out the easy ones, honoring only some of the commitments and ignoring others.

In principle, the Economic Contract Law stipulations on changing and terminating economic contracts are also suited to agricultural production contracts. The present agricultural production contracts permit changes or termination

mainly in the following situations: 1) if the contract is difficult to honor in accordance with the original provisions due to severe natural disaster, the contract can be altered and the relevant quotas readjusted; 2) if certain specialized production items of the contract cannot be honored because of severe illness or injury to the contractor, the contract can be altered or terminated; and 3) if the state plan on which the contract is based is revised or cancelled, influencing the honoring of the contract, it can be altered and the relevant quotas readjusted. If some of the provisions of the contract are not altogether reasonable due to lack of experience, generally the contract should be honored as originally concluded, and then readjustment and improved in the next year.

The Economic Contract Law also has clear stipulations with regard to breaking an economic contract. Breaking an agricultural production contract should be handled depending on circumstances in accordance with these stipulations: 1) if a contract cannot be honored in whole or in part due to severe natural disaster, the relevant quotas can be readjusted in accordance with the situation, and all or part of the economic responsibility can be absolved; 2) if a contract cannot be honored in whole or in part because of a mistake made by one or both parties, the party or parties who have made the mistake should accept responsibility for breaking the contract; and 3) if a contract cannot be honored in whole or part because of a mistake made by an upper echelon leadership organ or responsible professional authority, responsibility for breaking the contract should be taken by the upper echelon leadership organ or responsible professional authority.

On Handling Contract Disputes

First of all, the parties involved should try to negotiate a resolution. According to the stipulations of the Economic Contract Law, after a dispute arises in an agricultural production contract, the production brigade should promptly investigate and instruct the party or parties in violation to act in accordance with the provisions of the contract. For contract disputes which are complex and involve a broader area, the production brigade should call a meeting of all commune members and democratically negotiate a resolution. Production brigades acting as legally declared representatives of a legal entity should take the lead in honoring contracts and implement the negotiated decision of the production brigade. Before contract disputes which cannot be resolved through negotiation are mediated and arbitrated by upper echelons, the production brigade should adopt measures to prevent the situation from exacerbating and, to the extent possible, reduce the economic loss to the nation, collective and individual commune members. As long as the work is done well, the majority of contract disputes can be promptly resolved within the production brigade.

Next, do a good job of mediation and arbitration work on contract disputes. Regarding the stipulations of the Economic Contract Law, the brigade and commune should be asked to mediate and arbitrate agricultural production contract disputes which cannot be resolved through negotiation; the other party may directly ask the brigade and commune to mediate and arbitrate disputes involving a brigade cadre who breaks a contract. The brigade and commune should

accept the request, promptly organize their forces, investigate, hear the opinions of the masses and both parties to the contract, then mediate and arbitrate. They should carry out the policy of mediation first, arbitration second, persuading the party or parties breaking the contract to honor it, and thus reach a mediated agreement. Where responsibility for breaking the contract is clear but both sides' views of how to deal with it are not the same, the mediation unit will make an arbitration decision. Both mediation and arbitration should seek a fair and reasonable resolution, proceeding from what is best for production and unity, in accordance with the state law, statutes and policies, with the original contract as the basis. The contract signers should implement the mediation or arbitration decision, and the commune and brigade should oversee their compliance.

Third, the small number of contract disputes which still cannot be resolved by mediation or arbitration can be taken to the local people's court by the party involved. Other civil disputes which arise as a result of the contract dispute can also be taken directly to court. The court should hear cases of agricultural production contract disputes and decide them according to the law. The court's decisions are binding and the parties must carry them out.

On Contract Management

Agricultural production contracts should strengthen contract management in line with the demands of the Economic Contract Law concerning economic contract management.

The aim of agricultural production contract management should be to improve the agricultural production contract, reduce contract disputes, strengthen the handling of contract disputes, improve the contract fulfillment rate and the quality of fulfillment, strengthen and improve the agricultural production responsibility system, fully mobilize the initiative of commune members and the masses, raise the level of cadre management and promote the development of agriculture.

Agricultural production contract management organs: responsible agricultural sections should manage voluntarily in accordance with state stipulations. Specific opinions: these should be carried out by county, commune and brigade.

The main function of agricultural production contract management: the grassroots level agricultural production contract management unit should stress the following in accordance with the demands of the state with regard to economic contract management: 1) give guidance to production brigades and the commune member masses in concluding agricultural production contracts; 2) oversee contract implementation; and 3) mediate and arbitrate contract disputes.

With the spread of the agricultural production contract system, it is essential to formulate agricultural production contract management provisions. I propose that the relevant sections organize their forces, select a model county or commune, do some in-depth investigation and study, and in regard to the Economic Contract Law, formulate draft provisions for agricultural production contract management and gradually supplement and improve them in practice.

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CSO: 4007/444

PROBLEMS OF COTTON FUSARIUM, VERTICILLIUM WILT DISCUSSED

Beijing RENMIN RIBAO in Chinese 7 Mar 82 p 2

[Article by Shi Leiyan [4258 4320 1484] of the Plant Protection Institute of the Chinese Agricultural Sciences Academy: "Fusarium and Verticillium Wilt of Cotton"]

[Text] Fusarium wilt and verticillium wilt of cotton are two important worldwide diseases. These two diseases occur in all of our nation's major cotton-producing regions, and cotton production has suffered from varying degrees of damage. Generally, the affected plants produce 20 to 30 percent less in yield.

Fusarium wilt and verticillium wilt of cotton are diseases that cause withering due to the invasion of the vascular bundles by parasitic fusarium fungi and verticillium fungi, which are low plant fungi. Although their symptoms are different, their common characteristic is that the ducts of the cotton plants appear brown in color (the color of cotton plants affected by fusarium wilt is darker).

There are mainly three factors causing the development of fusarium and verticillium wilt in cotton: first, there are definite number of pathogens; second, cotton varieties that are senstivei to the diseases ..re planted; third, the environment is suitable for the occurrence of the diseases. The suitable temperature for pathogens is about 25 degrees centigrade. In field observations, the peak period of occurrence of fusarium wilt is before or after the square of cotton emerges. Verticillium wilt beings when the plant has 4 or 5 true leaves and develops rapidly after the square emerges. The peak period of occurrence is during the boll-forming period.

The paths of propagation of fusarium and verticillium wilt of cotton are complex. As soon as they are propagated into the cotton fields, it is very difficult to eradicate them, and the consequences are severe. Bacteria-carrying cotton seeds are the initial source of propagation of fusarium and verticillium wilt diseases over long distances. Each cotton region should strengthen inspection when transporting cotton seeds before spring

sowing to cut off this path of propagation. In the cotton fields, these two diseases can be spread by the roots, stems, branches, leaves of diseased plants, their cotton seed cakes used as fertilizers, the cotton waste of their cotton seeds, and water used for irrigation by channeling along furrows. Attention should be given to this in planting.

Fusarium and verticillium wilt of cotton were once regarded as "incurable diseases". Many years of prevention and control have proven that strengthening plant inspection, strictly protecting disease-free regions, planting disease-resistant varieties, gradually improving severely diseased regions, emphasizing rotational cropping and reverse cropping, reducing slightly affected regions, utilizing effective chemicals to eradicate diseased plants and diseased spots, eliminating scattered diseased regions and such comprehensive measures of prevention and control all produce notable results.

9296
CSO: 4007/333

STATE COUNCIL ISSUES NOTICE ON PREVENTION OF COTTON DISEASE

Beijing RENMIN RIBAO in Chinese 7 Mar 82 p 2

[Article: "State Council Issues Notice to Localities Listing Five Ways To Prevent, Control and Inspect Fusarium and Verticillium Wilt Disease of Cotton"]

[Text] The State Council recently issued a notice calling on localities to do a good job of preventing, controlling and inspecting fusarium and verticillium wilt diseases of cotton.

The notice says: fusarium and verticillium wilt are two destructive diseases of cotton. The seriously affected cotton plants wilt and die and cease to produce. In slightly affected plants, the yield is affected, and the length strengh and grade of fibers and such inner qualities are affected. This type of disease can be spread to distant places by seeds. Once the diseases are introduced, the germs can exist for a long time in thl soil and they are difficult to eradicate. The notice says: to guarantee the safety of our nation's cotton production, the following measures must be taken concerning the inspection, prevention and control of fusarium and verticillium wilt diseases of cotton:

1. Propaganda work must be carried out well so that the leadership and the masses in cotton-producing regions fully recognize the seriousness of damage by fusarium and verticillium wilt of cotton and the great significance of inspecting and treating the seeds well.

2. Before this spring's cotton sowing, the agricultural departments of each cotton-producing province, city and autonomous region must soncsientiously inspect the cotton seeds shipped from the diseased regions and disinfect seeds that may be carrying the diseases.

3. During the growth period of cotton, we must organize forces to survey the occurrence of the diseases in a key way on the basis of plans. On the basis of surveying and research, the severely diseased regions, the slightly affected regions and scattered regions where the diseases have occurred, should be clearly marked. In the severely diseased regions, popularization of disease-resistant varieties should be the main effort of comprehensive

prevention and control. In slightly affected regins and scattered regions of the disease, diseased plants must be removed in time to destroy the points of disease and to control spreading. To protect the disease-free regions, in the future, cotton seeds shipped into disease-free regions must be inspected by plant inspection departments and they must be disinfected and then popularized. Without approval by the plant inspection departments, seeds are not allowed to be popularized in disease-free regions. Those who violate inspection rules must be subjected to criticism and education, the economic responsibility must be pursued, and the cases must be handled strictly.

4. The cotton seed management system must be made sound. Bases for the propagation of superior varieties of disease-free cotton must be established, and inspection work at the production localities must be strengthened. In the future, propagation and popularization of cotton varieties and management and adjustment must be uniformly managed by the seed departments. Scientific research units cannot distribute at will new varieties which have not been evaluated and determined. When arranging new varieties for expanded experiments, approval by the plant inspection departments of the local province, city and autonomous region must be obtained.

5. The nation's scientific research coordination group on fusarium and verticillium wilt diseases of cotton must include in the key scientific research projects the selective breeding of new high-yielding and superior quality varieties that are concurrently resistant to fusarium and verticillium wilt diseases, and they must also include the study of techniques of disinfecting seeds and soil.

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CSO: 4007/333

BENEFITS DERIVED IN SETTING BASE PROCUREMENT, ALLOCATION FIGURES

Beijing ZHONGGUO CAIMAO BAO in Chinese 26 Jun 82 p 1

[Article: "Zhejiang Sets Base Figures for Procurement and Allocation of 14 Products, Strengthens Planning For Production and Purchase of Major Agricultural and Sideline Commodities"]

[Text] Zhejiang Province has instituted base procurement figures and base allocation figures for 14 major category II agricultural and sideline products in a program whereby the planned economy is paramount and market regulation supplementary. These will be put into effect in the production and procurement of agricultural and sideline products to promote the stable development of agricultural and sideline production and to increase quantities procured by the state.

During the previous period, in the sale to the state of agricultural and sideline products, some places in Zhejiang Province exhibited concern only for partial interests and overlooked the trend in state plans. Some of the agricultural and sideline product processing plants they operated themselves took raw materials away from some state industrial plants, impairing effectiveness in utilization of agricultural and sideline products. In some cases, before sales to the state of major agricultural and sideline products were fulfilled, goods were sold elsewhere thereby hurting fulfillment of state purchasing plans. In accordance with the spirit of the practice of centralized purchasing and quota purchases of category I and II agricultural and sideline products, and in accordance with the great or small importance to the national economy and the people's livelihood of different products, the Zhejiang Provincial People's Government studied the production and procurement situation for individual products, and in 1980 set base procurement figures or proportional procurement and retention figures for category II agricultural and sideline products including tea, silkworm cocoons, jute, citrus fruit, lumber, moso bamboo, maogao bamboo [3029 4643 4554], tung oil, Chinese tallow tree seeds, sugar, aquatic products, rosin, grass mats, and raw lacquer. While adhering to institution of a policy of centralized purchasing and quota purchases of major agricultural and sideline products, the requirements of the situation as a whole should be properly linked to the self-determination of production units and peasants to assure basic needs of the national economy and the livelihood of the people, with an exchange of commodities across jurisdictional lines.

As regards major agricultural and sideline products for which development of production is fairly stable, they set base procurement figures while also setting base allocation figures. For agricultural and sideline products in excess of base figures, they differentiated circumstances and adopted the following several methods:

(1) For traditional mainstay commodities such as tea and silkworm cocoons they instituted a division of excess and an increased price for excess procurement. In the case of tea, for example, the base procurement figure for the province was 1.1 million dan, and the base allocation figure for unfired tea leaf was 1.04 million dan, guaranteed to remain unchanged for 5 years. Sixty percent of tea leaf production in excess of base figures was centrally purchased by supply and marketing cooperatives, and 40 percent was handled by communes and brigades. After fulfilling quotas, production units could sell the remainder themselves and could, with permission, transport it elsewhere for sale. Production unit and commune member sales to the state of tea in excess of base figures brought higher prices. The increased price paid production units and commune members by dealer units was derived from a reduction in industrial and commercial taxes levied. Profits from the refining of unfired tea leaf from tea producing counties to state tea refining plants in excess of allocation figures are to be divided on a 30-70 basis, i.e., 30 percent being retained by the tea refining plant and 70 percent reverting to the county making the excess allocation for use in development of tea production.

(2) For industrial raw materials in extremely short supply within the province such as rosin, there is to be centralized procurement and increased price bonuses. The province's base procurement figure for rosin is 3,750 tons; it is 120,500 dan for pine resin 80 percent of which is to be allocated by the province with no change guaranteed for 3 years. For quantities in excess of base figures handled by communes and tree farms, a profit of 2 yuan per dan of pine resin is to be paid by processing plants for sales in excess of base figure. In the case of counties providing rosin in excess of base figures, the province will provide a subsidy of 800 jin of nitrogenous fertilizer and 250 jin of unprocessed food grain per ton of excess rosin sold. It will also allocate and sell industrial goods for use in daily life at a value equal to the resin.

(3) Where demand is limited, production in excess of base figures will be purchased at list price. One example is jute for which purchases at list price have been set at 2.55 million dan and purchases at negotiated price set at 450,000 dan with centralized allocation by the province guaranteed without change for 5 years. Jute in excess of 3 million dan will revert to procurement at list price.

(4) Where changes in the market supply and demand situation are unpredictable, purchases will be made at fluctuating prices. In the case of straw mats, for instance, the province's base procurement figure is 5.13 million mats centrally allocated by the province with no change guaranteed for 3 years. For quantities in excess of the base figure, supply and marketing

cooperatives will make purchases at fluctuating prices or else act as a purchasing and marketing agent.

In cases in which output is very unsteady or quantities purchased very small to begin with, or where active development of agricultural and sideline products is in process, they will set purchase and retention proportions and proportions to be purchased at list price and negotiated price.

In the process of setting base procurement figures, Zhejiang Province both gave attention to concurrent concern for the welfare of the state and peasants, and gave attention to concurrent concern for the interests of prefectures, municipalities, and counties as well as to concurrent concern for the welfare of commune and brigade enterprises. Every item was discussed by pertinent planning, agricultural, industrial, finance and trade, and commodity pricing department, and after a unanimous opinion was obtained, only after submitting the matter to the Provincial Government Standing Committee for discussion and approval was it handed down for implementation. Thus there was rather good concurrent concern for the interests of the country, collectives, and individuals, and for the interests of all departments. Though not tried for very long, and though some methods are still being steadily improved; nevertheless, during the past 2 years some initial benefits have been obtained. First of all the country's basic needs have been guaranteed. In recent years procurement of Zhejiang's tea, silkworm cocoons, and hemp has increased, the fundamental needs for state industrial plant production being assured. The shortages of commodities in some markets have also been ameliorated from what they had been for the previous several years. In addition, both production and procurement are more planned. In the case of moso bamboo and silkworm cocoons, for example, after the state had set base procurement figures, all production areas instituted quotas on production units, and all production units made specific arrangements about production in turn. After fulfilling plan, production units could arrange production on the basis of market demand and production, thereby reducing blindness in production. In procurement too, the situation was changed from formerly when whatever was produced was purchased, helping assure the country's basic needs. As a result of the development of production, both the country and the peasants have increased their earnings. In 1980 after the peasants had overfulfilled base figures for sales to the state, as a result of increased prices or negotiated prices paid in the process of procurement, earnings increased directly or indirectly by 70 million yuan. In 1981, they increased further to 80 million yuan. As far as national earnings are concerned, though the state reduced taxes to increase profits when buying products in excess of base figures and used some revenues to subsidize the peasants; nevertheless, as a result of the growth of production, once procurement had increased, the amount that the state took back in industrial and commercial revenues as a result of processing and sales amounted to more than the subsidies provided the peasants. Take tea for example. As a result of increasing profits through reduction of taxes last year, the state bought 466,000 dan of tea in excess of base figures. A rough preliminary calculation shows that as a result of the processing and sale of this tea, industrial and commercial tax revenues increased by more than 60 million yuan. After deducting the somewhat more than 24 million in taxes, allowed as profits for peasants, the state realized increased tax revenues amounting to about 40 million yuan from the processing and sales links.

BRIEFS

TYPHOON 11 WARNING--The Central Meteorological Observatory at 0600 [2200 GMT] on 7 August issued the following typhoon warning: At 0500 on 7 August, the center of this year's typhoon No 11 was located in the Pacific approximately 350 kilometers southeast of Hengchun Municipality, China's Taiwan Province--20.9 degrees north latitude and 124 degrees east longitude. Winds near the center increased to wind force 11 to 12. At present, the typhoon is moving west-northwesterly at a speed of about 10 kilometers per hour. It is expected to continue this course and to gradually approach the coastal areas of our country's Taiwan Province. It may land in southern Taiwan's coastal areas between tonight and tomorrow morning. Then, it will move toward Fujian Province's coastal areas. As a result of the typhoon, winds will gradually increase to wind force 6 to 8 in the Pacific east of Taiwan, Taiwan Province, the Bashi Channel, the Balintang Channel, the Taiwan Straits as well as Fujian's and eastern Guangdong's coastal areas between today and tomorrow. In the areas of or near the course of the typhoon's center, winds will range from wind force 10 to 11, and there will be heavy or torrential rain. All units are asked to listen carefully to local weather forecasts. [Text] [OW071055 Beijing Domestic Service in Mandarin 2230 GMT 6 Aug 82]

CSO: 4007/537

BRIEFS

EARLY RICE HARVEST--According to an estimate on 16 July, Fujian Province has already harvested more than 1.1 million mu of early rice. The single crop output of the six prefectures and cities of Sanming, Jinjiang, Putian, Longyan, Xiamen and Longxi has increased over the same period in 1981. However, because of an overall delay in ploughing and planting this year in various locations, and also because there were more rainy days and fewer sunny days in the month of June, the early rice maturing period had been delayed this year. As a result, harvest progress was slower than the same period in 1981. Prefectures and cities such as Jianyang, Fuzhou, and Ningde all had reduced output compared to the same period last year due to disasters like flooding and rice blast disease. Jianyang Prefecture harvested more than 150,000 mu of early rice, a decrease of 108 jin of yield per mu compared to this time last year. [Fuzhou FUJIAN RIBAO 22 Jul 82 p 1]

CSO: 4007/535

BRIEFS

SUMMER GRAIN PROCUREMENT--The Gansu Provincial People's Government held a telephone conference on 3 August urging governments at all levels to strengthen leadership over the summer grain procurement and storage work. Xu Feiqing, deputy governor of the province, presided over the conference. This year the province will reap a better harvest of summer grain than last year. It is estimated that the total yield will increase by some 10 percent. [SK062212 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 5 Aug 82 SK]

CSO: 4007/537

PROVINCIAL CCP COMMITTEE FIRST SECRETARY SPEAKS ON RURAL PROBLEMS

Guangzhou YANGCHENG WANBAO in Chinese 20 Jun 82 p 1

[Article: "Perseverance in Diverse Forms of Agricultural Production Responsibility Systems Is Emphasized by Ren Zhongyi [0117 0112 1138] at Provincewide Prefecture CCP Committee Agricultural Secretaries Conference. Rural Work at the Present Time Should Preserve 'Three Consistencies,' Give Attention to the 'Three News,' Take Firm Hold of the Building of the Party's Grassroots Level, and Intensify Building of Spiritual Civilization"]

[Text] Guangdong CCP Committee First Secretary, Ren Zhongyi said recently at a conference of Prefecture CCP Committee agricultural secretaries studying new conditions, and new problems in the wake of institution of agricultural production responsibility systems and the study of how to go about giving further forward impetus in future to agricultural work in Guangdong Province that the CCP Central Committee had repeatedly emphasized its intention to institute policies of liberalization toward foreign countries and to enliven the economy internally. Institution of diverse forms of agricultural production systems is firm and unshakeable.

Comrade Ren Zhongy noted that the key to whether or not we are able to be "firm" in this way in our work lies in how we handle the new problems that appear following institution of these policies. For example, following institution on responsibility systems in agriculture, had the new problems that appeared been ignored rather than diligently solved, or had these problems been overly exaggerated to bring about an actual negation of these policies and a retrogression away from them, then "firm" would have become empty talk. Conscientious study of new conditions, and genuine solution of new contradictions and new problems, plus unswerving carrying out of the line, program and policies of the Third Plenary Session of the 11th Party Central Committee with positively no wavering at all is something that we must be extremely attentive in mastering in our rural work and in all work. Therefore, all jurisdictions must diligently study and spread the representative experiences introduced at this conference. However, in studying and spreading them, one must proceed from one's own realities without copying mechanically in disregard of specific conditions.

In speaking about current rural work, Comrade Ren Zhongyi emphasized first the preservation of the "three consistencies."

First is consistent policies. Agriculture depends on policies, both on policies that are accurate and on policies that are consistent.

Second is consistent production responsibility systems. In deciding just which form of a responsibility system to adopt, each place has to adapt general methods to local situations. The leadership has to give tailored guidance to different areas. Consistent responsibility systems and perfected responsibility systems are one and the same; they have to be perfected in order to be more consistent.

Third is a consistent grain growing area. No further reductions can be made in Guangdong Province's grain growing area, particularly in its rice growing area; it must remain consistent at existing levels.

Comrade Ren Zhongyi noted that simultaneous with implementation of the "three consistencies," adroit guidance according to circumstances had to be provided, with attention given the "three news" as follows:

First is the spread of new techniques.

Second is organization of new combinations.

Third is the opening of new fields of production.

Comrade Ren Zhongyi emphatically pointed out the need to take firm hold of the building of the party at the grassroots to lay a good foundation for development of all endeavors. This is an assurance for achievement of the three "consistencies," and attention to the "three news," it is also an assurance for doing all rural work, and for building new socialist rural villages.

Comrade Ren Zhongyi also pointed out that rural villages also had to strengthen the building of socialist spiritual civilization including development of rural cultural, educational, sanitation, and athletic endeavors. The peasants should be educated in socialism, patriotism, and collectivism, and educated in concurrent concern for the three [country, collective, and individual]; routine ideological and political work should be intensified; prevailing habits and customs should be changed; and a campaign of five cares and four beautifications should be launched, etc.

This provincewide Prefecture CCP Committee Agricultural Secretaries Conference convened by the Provincial CCP Committee was held in Guangzhou from 10 to 18 June.

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REVISION OF LATE RICE CROP PLANTING PLANS URGED

Guangzhou NANFANG RIBAO in Chinese 14 Jun 82 p 2

[Article: Need for Attention to Readjustment of Crop Patterns for Late Crop Varieties in View of Expected Delay in Ripening of Early Rice Crop"]

[Text] Recently the Guangzhou Municipal Agriculture Committee held a conference on rice production in Panyu County. Agricultural experts and comrades from agricultural departments attending the conference analyzed this year's early crop production situation and advised the following: Inasmuch as ripening of the early crop will be later this year than in former years, action must be taken at once to readjust crop patterns for late crop varieties in order to make the most of advantages and avoid disadvantages to win a bumper harvest from the last crop.

Provincial units concerned report that this is a general problem throughout the province that must be accorded a high degree of serious attention. This is because, first of all, as a result of the return of cold spring weather that hurt this year's early crop, in many of the province's prefectures sowing and transplanting was done later than in former years. In Guangzhou Prefecture the delay was from 7 to 10 days. Second, temperatures were not high during the "vegetative growth stage" following transplanting and before the differentiation of young panicles. Statistics from the Tianhe Station of the Provincial Meteorological Observatory show that during the 70 day period from March to early May, total cumulative temperatures were 136 degrees less than during the same period last year. For the 40 day period during April to early May, total cumulative temperatures were 109 degrees less than for the same period last year. Early rice is a temperature sensitive variety, and when cumulative temperatures are insufficient, the period of young panicle differentiation is delayed and the ripening time may be delayed too. Third, in many places the number of late ripening varieties in the early crop are numerous. In Guangzhou Prefecture rural villages, for instance, they account for about 65 percent of the total crop, an all-time high year. Fourth, more rain than usual fell during late May and June, and there was less sunshine than usual. All these factors have made for delayed ripening of the early crop this year as compared with former years, producing a great impact on the late crop production season.

Analysis in terms of historical circumstances also merits attention. Post-liberation historical records show that years with a return of coldness in the spring are years when possibilities for a bumper harvest from the early crop are fairly great, while the late crop is prone to reduced yields. This is because when a return to cold in spring occurs during the early crop, the ripening time for the early rice will generally be delayed. If the late crop contains too many late ripening varieties, or if it is not transplanted just when it should be, the late rice crop will be unable to avoid the cold dew winds or cold damage, which will result in reduced yields.

This year Guangdong Province's early rice has again been fairly seriously stricken with a return of cold weather in spring. It is recommended that all jurisdictions decide at once to promptly readjust their crop patterns for late rice varieties, making appropriate cutbacks in the area planted to late ripening varieties and increasing the area planted to early and intermediate ripening varieties. Comrades attending this conference also emphasized that in places practicing responsibility systems whereby output quotas are fixed on a household basis and whereby peasant households assume full responsibility for task completion, because many peasants lack knowledge about scientific farming, leaders at all levels are to do good ideological work, explain reasons, and help with the proper matching of late crop varieties. All jurisdictions should promptly allocate seeds from places with surpluses to places with shortages, and rapidly organize their movement to places where they are needed to satisfy urgent peasant needs. In addition, preparatory work of other kinds should also be done, as for example, all around inspection and repair of all kinds of farm machines and implements, further implementation of plow oxen responsibility systems, protection of draft animals, attention to transportation of fertilizer reserves, and prompt movement into places where they are needed. Only in this way can there be any assurance that late rice crop transplanting tasks will be completed before the proper farming season has passed for the winning of a bumper grain harvest for the year as a whole.

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PLASTIC MULCHING OF SUGARCANE PROMOTED

Gaungzhou NANFANG RIBAO in Chinese 14 Jun 82 p 2

[Article by Wang Jianming [3769 7003 2429], director Sugarcane Institute, Ministry of Light Industry: "New Technique of Plastic Mulching Sugarcane Being Promoted in Province Has Great Prospects"]

[Text] Though China did not invent plastic mulching, its use has developed very rapidly in China, and it is used in extraordinarily ingenious ways. Following a visit to China, American professor Weitewaer [phonetic] said in a report to the American Department of Agriculture as follows: The things that the Chinese People's Republic are studying in the field of agricultural science are very numerous, one of which is creative development of agricultural applications of plastic mulching.

The plastic mulching of sugar that Guangdong Province is promoting as a new technique has great prospects. This is because every year in the cane producing regions of the province serious winter and spring drought seriously threaten the winter growth of seedlings of early maturing cane that have been left in the ground, and of the dormant roots of early maturing varieties, with the result that early maturing varieties reproduce slowly. This means that neither the early maturation characteristics nor the high sugar properties of early maturing varieties can come to the fore, and thus the large expenditure by the state on preferential subsidies for early maturing varieties are wasted, with no noticeable increase in sugar during the early cane crushing season. If plastic mulch is used to cover winter-planted early maturing sugarcane, and if plastic mulch is used to cover the dormant roots of early maturing sugarcane, this problem can be pretty well solved. Furthermore, the coastal saline field sugarcane growing area, which constitutes a substantial part of the area of the province, is in danger from salt damage even on sunny days. If plastic mulch is spread between sugarcane rows before the rows grow shut at some time between planting and the seelding stage, not only will weeds be reduced between rows, but capillaries in the soil will also be prevented from bringing water to the surface, and increase in the salt content of the soil surface will thereby be controlled.

The new technique of covering sugarcane with plastic mulch helps all cane growing more canes and to increase their sugar content. It helps improve sugarcane farming methods to meet sugar refinery production requirements, so

it greatly helps both industry and agriculture. For example, it has played an active role in increasing both cane output per mu and earlier ripening of the autumn planted sugarcane that was promoted for cultivation during the 1970's. However, as a result of the 14 to 15 month growing season required for fall planting sugarcane, the soil utilization rate is fairly low. Currently, not only in the Pearl River delta and the Hanjiang Delta, where land is scarce relative to population, has the cane growing area declined, but even in the Zhanjiang cane growing area, where land is relatively abundant in terms of population, the same trend had occurred. (In Xuwen and Haikang counties, for example, the fall planted cane area now amounts to only one one-thousandth and three one-thousandth of the total area planted to sugarcane. Were the new farming techniques of fall propagation of seedlings with winter and spring transplanting to be used (plastic mulching used during the periods of low temperature in winter and spring), the cane would have an open field growing season of about 11 months, and virtually the same benefits could be obtained in terms of cane yields per mu and high yields of sugar from the early crop as from the growing of fall sugarcane.

In addition, in high altitude cane growing areas where frost and freezes occur, frost and freezing shorten the sugarcane growing period with the result that the cane frequently does not mature sufficiently, the sugar content of canes tends to be low, and yields are limited. In such cane growing areas, sole use of early maturing high sugar varieties is not enough. If plastic mulch is used to cover winter planted or early spring planted cane, the growing season can be extended, resulting in both an increase in cane yields per mu and an earlier ripening season. In addition, by using plastic mulch to cover dormant roots in cane growing areas where frost and freeze would damage dormant roots left in the soil, thereby establishing a local dormant rodt system of cane growing, losses from storage of varieties could be avoided. Even in cane growing areas without frost and freezing, dormant roots may be covered with plastic mulch to lengthen the number of years dormant root sugarcane will live, to increase output from dormant root sugarcane, and to cause earlier ripening of dormant root sugarcane, (preliminary experiments show cane sugar content can be increased by an absolute 1.5 percent) thereby gradually reducing sugarcane production costs and gaining the initiative in management of sugarcane production.

Were plastic mulching of sugarcane promoted generally, economic benefits would increase strikingly, particularly since dryland sugarcane in Guangdong Province accounts for more than 70 percent of the total sugarcane growing area, with most of the sugarcane growing area sustaining serious winter and spring drought, including some sugarcane areas where water conservancy conditions are very poor and not readily improvable. Formerly, it was impossible to use growing of seedlings in winter for spring planting during dry periods in such sugarcane growing areas, and by the time the rainy season had come, the crushing season was finished. If one wanted to get seedlings for summer planting, there were no seedlings to be had. In addition, roots of dormant sugarcane, when taken up during winter or early spring, also suffered from a great loss in vitality as a result of sustained drought. During the following year not only were they slow to put forth shoots, but shoots did not grow evenly and yields were very low. Were winter and spring grown sugarcane directly planted and covered with plastic mulch, or were seedlings being grown in nutrient pots covered with plastic mulch for transplanting during the time of spring rains in the

succeeding year, and were dormant sugarcane roots also covered with plastic mulch, the growing season for spring sugarcane would be advanced, and both yields per mu and sugar content would be increased. Furthermore, the threat from winter and spring drought to newly planted sugarcane would be reduced. Such a method of combating and preventing drought is more realistic than simply carrying out spray or drip irrigation, and is also more active than waiting for particularly drought resistant varieties to be bred.

At the present time some cadres and masses fear that mulching of sugarcane may increase production costs and reduce earnings. Practice in pilot project units has demonstrated that such apprehensions are unnecessary. Take the case of the Xiaxue Production Team in Yanggongzhou Production Brigade, Shatian Commune, Dongguan County, for example. In mid-January this year, they used 200 kilograms of plastic mulch to cover 27 mu of dormant root sugarcane for a month, after which this same plastic mulch was again used to cover 30 mu to promote sprouting of spring sugarcane that had been planted. The average cost for plastic mulch was only 13 yuan per mu, equivalent to the price paid for 171 kilograms of Yuetang 57/423 sugarcanes, or 143 kilograms of Guitant No 1 sugarcanes. Even if the cost of plastic mulch for dormant root sugarcane were 30 yuan per mu, that would not be more than the price of 450 kilograms of sugarcanes. Meanwhile, during the past 2 years, wetland dormand root sugarcane grown at plastic mulch pilot project units produced at a rate of increase of between 0.5 and more than 1 ton per mu. For example, our institute experimented with plastic mulching of dormant root sugarcane in fields surrounding the institute, and even though mulching was delayed until March, sugarcane output increased from somewhat more than 15,000 jin to somewhat more than 19,000 jin, an increase of 19 percent. At the Zhanjiang Sugarcane Experimental Station, sugarcane grown on hill drylands was plastic mulched at the end of March last year for an increase in output as high as 30 percent. Thus, the increase in sugarcane yields more than offsets the cost of the plastic mulch, and since the mulch increases the sugar content of the cane and hastens maturity, this translates into added income.

Plastic mulching of sugarcane in combination with the culturing of cane seedlings in nutrient pots is without doubt a major technical measure for increasing sugarcane output and increasing sugar in Guangdong Province. However, inasmuch as not much time has elapsed since introduction of this technique into the province, it has to be rapidly promoted for use throughout the province's sugarcane growing areas, which will require efforts by all concerned. In addition to doing a good job in setting up pilot points to provide demonstrations, intensifying research, and conducting publicity, appropriate bonus policies should also be adopted. At Shatian Commune in Dongguan County, plans call for an increase next year in the sugarcane area mulched with plastic to 5,000 mu. Payment for the plastic will be made from a loan from the Peasant's Bank arranged for by sugar refineries concerned in the county, who will be responsible for paying interest to the bank. Except for the cost of the plastic, all or most of resulting increase in earnings will go to communes and brigades. Other jurisdictions should note their method.

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BRIEFS

EARLY RICE HARVEST--Guangdong Province has reaped a record harvest of early rice and an increase of 700 million jin is expected. Apart from Shaoguan Prefecture and the seriously flooded areas, all counties have increased production output in varying degrees. There were many natural disasters this year. In spring, there was plenty of rain and the temperature was very low. In May, heavy rain fell in Qingyuan, Yingde, Guangning and Sihui counties and there were maintain torrents. Some 2.5 million mu of early-crop fields were flooded, of which, some 600,000 mu were damaged. Despite natural disasters, the province was able to reap a harvest of early crops due to the implementation of the production responsibility system. Furthermore, some 30,000 peasants had signed technological contracts with technological departments, which has improved the standard of scientific planting. [HK041103 Guangzhou Guangdong Provincial Service in Mandarin 1000 GMT 1 Aug 82 HK]

CSO: 4007/537

BRIEFS

LOW-YIELD LAND IMPROVEMENT--The Guangxi Regional Agricultural Bureau allocated 20,000 tons of chemical fertilizer to 120 communes to improve 2 million mu of low-yield farmland. The regional agricultural bureau held a meeting with the directors of the prefectural and county agricultural bureaus to form a policy to make good use of chemical fertilizer so as to strive for a bumper harvest of late rice. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 14 Jul 82 HK]

EARLY RICE PRODUCTION--Guangxi region reaped a bumper early rice harvest. According to preliminary statistics, the region's total output of grain up to the present is 800 jin more than in the corresponding period of last year. Output of peanuts, rapeseeds, flue-cured tobacco, tea, cocoons, pineapples and bananas has shown relatively great increases. The number of communes throughout the region which are commercial grain bases has increased from 150 in 1980 to 197 this year. The arable land area accounts for 41 percent of the entire region's arable land area. With the vigorous support of relevant departments, the development of grain production in the region has been promoted. [HK100950 Nanning Guangxi Regional Service in Mandarin 1130 GMT 4 Aug 82 HK]

CSO: 4007/537

TECHNIQUES OF CULTIVATING COTTON SEED 'LUMIAN NO 1' GIVEN

Shijiazhuang HEIBEI RIBAO in Chinese 13 Mar 82 p 2

[Article by the Economic Crops Department of the Provincial Bureau of Agriculture: "Discussion on One-Time Sowing and Preserving Full Seedlings of Cotton--Supplement to the Article 'The Techniques of Cultivating Lumian No 1'"]

[Text] In the article "The Techniques of Cultivating Lumian No 1" published on 1 March, the section on "striving toward one-time sowing to preserve full seedlings" pointed out the necessity to select the appropriate sowing time. In addition, the following must also be done:

1. The density must be appropriate and the structure of the colony must be rational. Lumian No 1 has a strong boll-forming characteristic. It has more summer bolls, the potential of the individual to increase yeild is great, and the plant consumes a lot of organic matter. To obtain high yields, many ways must be used to create conditions for the plant to manufacture organic substances. The most important way is to solve the problem of light. If the problem of light energy is solved well, the variety's characteristics will be able to develop, and thus higher yields can be obtained. Therefore, we must not unilaterally emphsize dense planting of small plants. At present, the problem in large area production is that the row distance is overly close, and missing seedlings and broken ridges are serious. When the row distance is too close, not only is field management inconvenient, but in rainy weather this causes the formation of a canopy in the cotton field. Boll forming on the middle and lower parts of the plant is poor, the number of rotten bolls increases, and this leads to reduced yields. If the row distance is slightly larger, then during years of drought, sometimes the cotton plants will not close up the ridges tightly, and because aeration and light penetration are better, the middle and lower parts form more bolls, the weight of the bolls increases, the quality of cotton is better, and there will not be large losses. A relatively more rational structure of the colony of Lumian No 1 is: a plant height of 1 meter and a per-mu yield of about 180 jin of ginned cotton, a row distance of 2.5 chi, a distance of 8 cun between plants, and an actual harvest per mu of about 3,000 plants; a plant height of 80 centimeters, a per-mu yield of ginned cotton of 100 to 120 jin, a row distance of 2.2 chi,

a distance of 7 cun between plants, and an actual harvest per mu of 3,500 to 4,000 plants; a plant height of 60 centimeters, a per-mu yield of ginned cotton of 80 to 100 jin, a row distance fo 2 chi, a distance of 6.5 cun between plants, an actual harvest per mu of 4,500 plants; a plant height below 60 jin, a row distance of 1.6 to 1.8 chi, a distance of 6 cun between plants, an actual harvest per mu of 5,000 to 6,000 plants. With such row distances, should we use large and small rows or equidistant rows? We can follow local custom; we should not forcefully practice uniformity. In general, if the average row distance is over 2.3 chi or under 1.8 chi, equidistant rows would be better. If the average row distance is about 2 chi, it is suitable to use large and small rows.

. The seeds must be treated well. To shorten the time the cotton seeds have to remain in the soil, the seeds must be treated at the time of sowing so that the cotton seeds are in a state ready for germination. Sowing should be carried out when about 20 percent of the cotton seeds have reached the stage of pouting and budding.

There are many ways of treating cotton seeds. A good method is the following: On the morning of the first day, the cotton seeds should be soaked in hot water that has been "boiled three times and left to cool once" or "boiled two times and left to cool once" for half an hour, or the seeds can be directly soaked in cold water for 48 hours until the cotton seeds absorb sufficient moisture, the pericarp of the seeds softens, and the cotyledon separates into layers. The seeds are then taken out and dried under the sun for a while until the short cotton lint becomes white. Then, the cotton seeds are piled up overnight into a level pile of one and a half chi or two chi for stewing to stimulate germination until about 20 percent of the seeds begin pouting. Now, they are ready for sowing. When using Furandan granules to mix with the seeds, the chemical can be mixed with the seeds after forced budding. Each mu of cotton seeds can be mixed with 4 to 5 jin of 3 percent Furandan.

3. Selecting an appropriate sowing method. Each locality must determine an appropriate sowing method according to the local moisture condition, the condition of the seeds and the custom. Generally, it is better to use machine sowing or exposed sowing. It is better to use furrow seeding in saline and alkaline soil. In dryland where the moisture condition is poor, sowing by deep drilling to lift up the soil or dibbling with water can be carried out. Regardless of which sowing method is used, some reserve seedlings must be planted on the sides of the fields or on the backs of ridges to prepare for transplanting and replacing missing seedlings.

4. After sowing, management must be strengthened in time. Attention must be paid to inspecting each ridge and each parcel of land, and when problems are discovered, they should be solved in time. If the weather is arid and there is a lot of wind, if the moisture condition of the soil deteriorates, if there is a danger of the seeds drying up, packing to

improve moisture in the fields where bottom moisture conditions are good should be undertaken to improve the water supply in the seed layer. When the bottom moisture condition is poor, a small amount of water can be irrigated along the ridges with a small water kettle so that the water will gradually percolate to the cotton seeds. If little rain occurs after sowing, the hard covering layer of the ground should be broken up in time. If heavy rain occurs, the ground should be harrowed deeply for aeration to help the seedlings emerge from the soil. Harrowing should be as deep as the sowing depth. When the seedlings emerge in rows, the soil should be intertilled and loosened in time to bring out the moisture, to preserve bottom moisture and to stimulate the growth of the seedlings.

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BRIEFS

QINGGANG COUNTY FARMING--Qinggang County, Heilongjiang Province, takes advantage of the opportune time after the rain to plant grain crops, vegetables and forage grass. Though stricken by drought and insect pests this year, the county still plans to plant 13,000 mu of buckwheat, 24,000 mu of vegetables and 53,000 mu of forage crops. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 21 Jul 82 SK]

FIELD MANAGEMENT--Yilan County in Heilongjiang Province is vigorously strengthening field management to cope with natural disasters and try to improve poor growth of seedlings. There are over 400,000 mu of crops across the county, which have been damaged in varying degrees by insect pests. Therefore, the county has dispatched over 100 tractors to join the extra operation of weeding, plowing and banking soil to poorly growing crops. The county has planted vegetables over its 70,000 mu farmland whose former crops were totally damaged by the drought and insect pests. [SK190010 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 17 Jul 82 SK]

SURFACE WATER SURVEYING--Through 3-year efforts, hydrogeological technicians in Heilongjiang Province have worked out statistics on provincial surface water sources. Over the past many years, the province's per year precipitation was 531 mm. Its per year evaporation volume is 391 mm, and its per year surface water resources total 655.81 centimeters. [SK202244 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 29 Jul 82 SK]

WHEAT HARVESTS--Farms in land reclamation areas throughout Heilongjiang Province have begun their harvesting operation. As of 20 July, they had harvested 905,000 mu of wheat crops and threshed 417,000 mu of wheat crops, obtaining about 64.5 million jin of net wheat. [SK220350 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 21 Jul 82 SK]

CSO: 4007/537

BRIEFS

AGRICULTURAL, SIDELINE PRODUCTS STATISTICS--By the end of June, peasants of Hubei Province had sold agricultural and sideline products to the state valued at 1.61 billion yuan, an increase of 30 percent as compared with the same period last year. By 5 July, the province had overfulfilled its procurement quota of summer crops and rapeseed. In the first half of the year, procurement of pigs increased by 106,000 head over the same period last year. Procurement of tea and tung oil have also increased. Vegetable supplies in markets increased by 22 percent over the same period last year. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 15 Jul 82 HK]

CSO: 4007/537

BRIEFS

WATER CONSERVATION WORKS REPAIRED--Some 80,000 small- and medium-sized water conservation works have been damaged by floods in the middle of June. While restoring production, the relevant prefectures and municipalities organized human and material resources to repair the damaged water conservation works. According to initial statistics of Xiangtan, Hengyang, Lianyuan and Chongde prefectures, some 840,000 people have taken part in repairing water conservation works. At present, some 22,000 water conservation works have been basically repaired. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 14 Jul 82 HK]

CSO: 4007/537

MEASURES SPECIFIED TO PREVENT WHEAT DISEASE

Jiangsu XINHUA RIABO in Chinese 2 Mar 82 p 2

[Article: "Pay Attention to the Prevention and Control of Pellicularia Gramineum Ikata et Matsumura"]

[Text] Cadres and commune members in farm villages know very well about the damage of sheath and culm blight of rice, but they are relatively unfamiliar with Pellicularia gramineum Ikata et Matsumura, which urgently needs attention.

According to observations and measurements by the Zhengjiang Prefecture Agricultural Science Institute from 1979 to 1981, Pellicularia gramineum Ikata et Matsumura is caused by the rhizoctonia fungus. In recent years, it has appeared on several popularized varieties in Zhengjiang Prefecture. It has spread relatively quickly and its damage is relatively serious. The Dantu County Agricultural Bureau investigated 504 parcels of wheat fields and found that the number of severely diseased parcels reached 9.3 percent. In 1981, Wujin, Jintan, Lishui, Gaochun, Yangzhong Counties surveyed 397 small parcels of wheat fields and found that the average number of diseased plants reached 25.7 percent.

The Pellicularia gramineum Ikata et Matsumura and sheath and clum blight of rice are notably different regarding the time of occurrence. Sheath and culm blight of paddy rice generally begins during the tillering period of paddy rice. Wheat is affected by Pellicularia gramineum Ikata et Matsumura during different stages of growth; thus we find rotten buds, dead seedlings, diseased seedlings, rotten stalks and flower stems, and wilted bearing spikes. Wilted bearing spikes or lodging caused by the rotting of flower stems seriously affect the yield. Rotting of flower stems is characterized by the occurrence of light brown diseased rhombus spots on the lower leaf sheaths, generally after the wheat seedlings have returned green. As the temperature rises and the wheat seedlings joint, the base of the leaf sheath first produces waterlogged elliptical spots, then greyish cloudy diseased spots appear on the central part and light brown cloudy diseased spots occur at the edges. This is called "mosaic stalk." Afterward, in rainy and highly humid weather, white or yellowish-white layers of hypha can be seen on the inside of the diseased leaf sheath and the stalks. When the germs of the leaf sheath affect the stalks, short light brown striped

spots first emerge and then they expand into rhombus spots (called eye spots). When the diseased spots on the stalks enlarge and connect and spread over the entire internode, frequently the wall of the stalk softens, causing physiological loss of water and the plnat dies from necrosis, or the diseased parts split open longitudinally and the wheat plant withers prematurely. Mosaic stalks and rotting stems prevent some plants which could form spikes originally from forming spikes, or cause some plants to form wilted bearing spikes. Although some may be able to head, because of insufficient nutrients and moisture, the number of fruited grains per spike are reduced, and the weight of grains drops. Zhengjizng Prefecture's Agricultural Science Institute measured the wheat varieties "ning mai No 3" and "zheng 7630" from 1979 to 1981: When the diseased spots occur on the leaf sheath of the reverse third leaf, the thousand-grain weight drops 2.8 to 3.2 grams. When the diseased spots occur on the leaf sheath of the reverse second leaf, the thousand-grain weight drops 4.1 to 5.4 grams. Just this one item alone causes a loss of 11 percent to 13 percent in yield.

Different varieties of wheat show notably different resistance to Pellicularia gramineum Ikata et Matsumura. Zhengjiang Prefecture's Agricultural Science Institute tested the disease resistance of 424 wheat varieties and strains by artificial inoculation in 1981 on the basis of evaluations made during the 2 previous years. Among them, the varieties "naing mai No 3", "ning 7317", "9-10-8-3", "zheng 7630", "qun zong 42", "su mai No 3", "si mai 117", "Taishan No 1", and "Anhui 11" suffered more seriously from the disease. The percentage of diseased plants reached 16 percent to 55 percent.

To better develop the potential of increased yields of presently available superior varieties of wheat, sufficient attention must be paid to the prevention and control of Pellicularia gramineum Ikata et Matsumura, especially in regions along the banks of the Changjiang and in southern Jiangsu where there is a lot of rain and where the temperatures are high. These conditions frequently cause damage due to dampness or overcast. Prevention should be the main effort in the prevention and control of Pellicularia gramineum Ikata et Matsumura, and prevention and control should be comprehensive. First, all ways must be used to increase the application of organic fertilizers. Attention must be paid to timely sowing. Furrows should be dug to reduce dampness, and weeds should be removed. In prevention and control by chemicals, emphasis should be placed on wheat fields of the early crop of susceptible varieties. An effective farm chemical is the jing gang [0064 1511] mycin. The first application of the chemical should be made during the period when the number of diseased plants is visibly increasing, generally during the first and middle 10 days of March. In fields where the disease has occurred early or is especially serious, the chemical should be applied appropriately earlier. Another application can be made 15 to 20 days later. For each application, 1 percent of jing gang mycin of 1 to 1.5 shi jin mixed with 10 shi dan of water per mu can be sprayed manually or by machine. If the chemical is mixed with 120 to 150 shi jin of water as a mist, the chemical solution should be strictly sprayed at the base of the wheat plants to enable the chemical solution to come into widespread contact with the germs. The effectiveness of prevention generally can reach about 70 percent. In regions where the disease occurs frequently

or where the disease is serious, during autumn sowing, 1 percent jing gang mycin of 1.5 shi jin per mu can be used on a trial basis to cover the seeds to reduce rotting of buds. The rate of germination can reach above 91 percent, higher than the control by 10 percent to over 28 percent.

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CSO: 4007/333

BRIEFS

AGRICULTURAL MEETING--On 10-14 July, the provincial agricultural department held a meeting of responsible persons of agricultural bureaus of the prefectures and Nanjing city to work out plans on autumn farming following the good summer harvest. This year's good wheat and rape harvest is largely attributable to expanded acreage. This was done at the expense of winter green manure acreage and rational crop rotation. Also, the broadcast sowing and continuous growing of wheat have resulted in widespread growth of weeds in 5 to 6 million mu of land, causing a loss of nearly 100 million jin of grain. The meeting called for proper planning on autumn planting, rational crop rotation and other remedial measures. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 17 Jul 82 OW]

GRAIN PRODUCTION--By the end of June, the state had purchased more than 3.6 billion jin of summer grain in Jiangsu Province, 12.5 percent above the state plan, or 1.1 billion jin more than in the same 1981 period. The amount of rapeseed purchased was 660 million jin, 20 percent above the state plan, or 220 percent more than in the same 1981 period. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 3 Jul 82 OW]

XUZHOU PREFECTURE STORM DAMAGE--Xuzhou Prefecture, Jiangsu, has drained 4 million mu and repaired 680,000 mu of corn and cotton fields damaged by recent heavy rains, wind and hail. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 11 Aug 82 OW]

RURAL HOUSEHOLD INCOME--According to a survey conducted by the Jiangsu Provincial Statistical Bureau, of 1,000 rural households at 71 points in 22 counties, commune members' income in the first half of 1982 increased 38 percent over the same period last year, with per capita income reaching 109.3 yuan, an all-time-high. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 12 Aug 82 OW]

YANCHENG PREFECTURE AGRICULTURAL PRODUCTION--Jiangsu's Yancheng Prefecture increased its annual total grain output from 4.5 billion jin in 1978 to 5.3 billion jin in 1981, cotton from 2.59 million dan in 1978 to 3.94 million dan in 1981. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 12 Aug 82 OW]

HUAIBEI REGION RAINSTORM--From the evening of 21 July to the morning of 22 July, Huaibei Region which includes Jiangsu, Anhui and Henan Provinces, had a torrential rainstorm over a large area. 25 cities and counties, 8 of which are in Jiangsu Province, had over 100 mm of torrential rain within 12 hours. Zhumadian in Henan Province had up to 307 mm, Xiao County of Anhui Province had up to 361 mm and Xuzhou Municipality, also of Anhui, had up to 234 mm of rain. Since the rainstorm, the middle and upper reaches of Huai He beyond Lake Hongze have produced a floodwater capacity over 12 billion cubic meters. Bangfu Dam had, by 27 July, a flood-peak flow capacity of 8,000 cubic meters per second. On 29 July, Lake Hongze had a flow capacity of about 9,700 cubic meters. Peicang Prefecture near Yi He (in Anhui) and Shu He (in Jiangsu) had rainfall of 100 mm. Lake Luoma had 600 million cubic meters of water. The water level of the Lixia He area after this rainstorm was expected to rise to 1.6 meters. The areas affected by the rainstorm have mobilized in all-out way to combat flooding and waterlogging. [Excerpts] [Nanjing XINHUA RIBAO in Chinese 23 Jul 82 p 1]

BACTERIAL INSECTICIDES--Nanjing, 17 Jul (XINHUA)--A method of vegetable pest control by bacteria is being applied to 1,130 hectares of vegetables, about one-fourth of the vegetable gardens in the suburbs of Nanjing, according to the city's vegetable research department. The bacterial insecticides used in Nanjing belong to the bacillus thuringiensis family and have evidenced little pollution or side effects thus far. They are more effective in killing such farm pests as cabbage worms and moths than other pesticides. One kilogram of the bacterial insecticide, which can be used on 0.5 hectares to 0.6 hectares, costs only 2 to 3 yuan. The expenditure of bacterial insecticides per hectare is 50 percent less than the farm chemicals. With the bacterial insecticides, the vegetables appear to grow better than those applied with farm chemicals, and do well on the market. The study and experiments on the bacterial insecticudes b an in 1977. [Text] [OW181818 Beijing XINHUA in English 1219 GMT 17 Jul 82 OW]

CSO: 5400/4009

BRIEFS

GUANGFENG COUNTY GRAIN PURCHASE--By 9 August, Jiangxi's Guangfeng County had delivered 18,144,000 jin of summer grain to the state, overfulfilling this year's quota. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 11 Aug 82 OW]

JIUJIANG PREFECTURE EARLY RICE--Jiangxi's Jiujiang Prefecture has harvested 1.4 billion jin of early rice, 10 percent more than last year. The average per-mu early rice output was 623 jin. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 11 Aug 82 OW]

JINXI COUNTY DIVERSIFIED ECONOMY--Jinxi County in Jiangxi has achieved good results in promoting diversified economy. In 1981, the county produced 160,000 dan of hemp and over 400 dan of tea, which increased the county's annual per capita income by some 30 yuan. The acreage of growing hemp, tea and tangerines has increased from 9,000 mu in 1976 to 62,000 mu at present. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 12 Aug 82 OW]

CSO: 4007/537

PEASANTS' PURCHASING POWER INCREASES

SK120747 Changchun Jilin Provincial Service in Mandarin 1100 GMT 11 Aug 82

[Text] Since the 3d Plenum of the 11th Party Central Committee, our province has made a great development in agricultural and sideline production, enabling the rural economy to enliven and the peasants to increase their income while continuously improving their lives and their purchasing power, thanks to the further implementation of the party's rural economic policies.

According to statistics, the peasants' purchasing power for commodities in the province in 1981 was 3.1 billion yuan, an increase of 55.8 percent over the 1978 figure and an average increase rate of 15.9 percent a year, which was higher than the 14.8 percent annual increase of urban people's purchasing power.

The commodities that the peasants bought showed a great change because of increased improvement in their standard of living. In the past, peasants put the materials of daily life before the materials of agricultural production in their purchases. Food, clothing and daily necessities of dependable quality were the most popular goods. At present they give priority to purchasing the means of agricultural production and buy consumer goods in a choosy way with an emphasis on improving living conditions.

In 1981, the supply volume of agricultural production materials for the supply and marketing cooperatives throughout the province showed an increase of 52.3 percent over that of 1978. The increase in agricultural production means was three times the increase of consumer goods. In 1981, the sales of chemical fertilizers reached 1,680,000 jin, an increase of 96.7 percent over that of 1978. The sales of pesticide, farm plastic film and medium- and small-sized farm tools increased by a large margin.

The retail sales volume of consumer goods increased 16.7 percent over that of 1978. The sales of 48 major industrial products showed comparable increases; particularly such durable consumer goods as bicycles, radios, sewing machines, clocks and watches showed great increases in the past three years. The sales of those five durable consumer goods in the period of 1979 to June 1982 witnessed increases like those of the 1974-1978 period. The continuous increase of the supply of commodities to rural areas alleviated the short supply of durable consumer goods.

CSO: 4007/537

BRIEFS

COMBATTING DROUGHT--In Jilin Province, the Shuangliao Couty CCP Committee and government transferred a large number of county-level office cadres to organize drought-resistance work groups to help combat drought. Shuangliao County has had little rainfall for over 2 months, and the temperature remains high. The seedlings of cereal crops in some areas have withered. The county CCP committee and government encouraged office cadres to combat drought and organized them to go to the countryside to rush-sow early-ripening crops and melons and vegetables and strive to reduce the losses caused by drought. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 15 Jul 82 SK]

CSO: 4007/537

BRIEFS

RAINFALL REPORT--Beginning from the morning of 5 August, many areas in Liaoning Province experienced rainfalls. As of 0500 on 6 August, moderate and heavy rains fell in most areas of Chaoyang, Jinzhou, Fuxin, Tieling, Shenyang and Dandong. Some areas experienced torrential rains. The precipitation was 15 to 55 mm in general. Thanks to these rainfalls, the drought in some areas has become less serious. However, some areas still suffer from drought due to fewer rains. [SK080050 Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 6 Aug 82 SK]

CSO: 4007/537

BRIEFS

GRAIN PURCHASE--Peasants in Tumd Right Banner, Nei Monggol Autonomous Region, have actively sold wheat to the state. By 3 August the banner had set aside for storage 810,000 jin of summer grain, doubling the corresponding 1981 figure. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 7 Aug 82 SK]

GOOD CROP EXPECTED--Ju Ud League, in Nei Monggol, is expecting a good harvest. Barring extraordinarily serious natural disasters in the future, there will certainly be an exceptionally good harvest. The league cultivated 62,353,000 mu of crops this year, of which 10,833,000 mu are grains and soybeans and 258,000 mu are oil-bearing crops. [SK051222 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 31 Jul 82 SK]

LIVESTOCK PRODUCTION--Despite successive years of drought, in Ju League, Nei Monggol Autonomous Region, is having good results with livestock production. The number of livestock in the league exceeds 6 million, 74,000 head more than in 1964, a year that boasted the largest number of livestock. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 3 Aug 82 SK]

LIVESTOCK OUTPUT--Hulun Buir League, Nei Monggol Autonomous Region, has made great progress in raising milk cows. The league has over 38,000 head of milk cows. There are over 15,000 households in the league which have engaged in raising milk cows. In the first half of 1982, the league registered a 1.8-fold increase in milk procurement over previous records. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 5 Aug 82 SK]

ULANQAB LEAGUE LIVESTOCK OUTPUT--Ulanqab League, Nei Monggol Autonomous Region has reaped a bumper harvest in animal husbandry this year. According to statistics, the league has over 6.66 million head of animals, a 24.2 percent and 150,000 head increase over the figure of the corresponding 1981 period. Meanwhile, the league has built over 100,000 mu of man-made pastures and has registered over 1 billion jin increase of fodder grass over the 1981 figure, which may be consumed by 185,000 animals. According to statistics compiled at the end of the fiscal year, the league registered a 30,000 head increase of female animals and a 207,600 head increase of young animals over the figures of the corresponding 1981 period. [SK060552 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 5 Aug 82 SK]

RAINFALL REPORT--Some areas in Nei Monggol Autonomous Region have had rain in the past few days. Precipitation ranged from 30 to 100 mm in Ih Ju and Ulanqab leagues and Hoohot and Baotou municipalities, according to statistics released on 3 August. Otog and Hanggin banners have had 56 and 30 mm of precipitation respectively. The rains are conducive to the growth of field crops and to easing the drought in the western part of Ju Ju League. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 4 Aug 82 SK]

CSO: 4007/537

NEW EMPHASIS GIVEN HOUSEHOLD RAISING OF LIVESTOCK, POULTRY

Jinan DAZHONG RIBAO in Chinese 26 Jun 82 p 1

[Article: "Effective Way To Develop Livestock Industry. Taian Prefecture's Experiences in Livestock Production of Using the 'Four Households,' All Rising Together"]

[Text] Taian Prefecture has summarized the lessons of past experience to adopt a system of "four households" all rising together to hasten growth of the livestock industry. This is a new road they have pioneered through practice for fairly rapid growth and fairly high economic benefits.

In this prefecture's development of the livestock industry, by the "four households" is meant specialized households, key households, combinations of households, and ordinary households. Specialized households are households that have contracted care of collectively owned livestock. In addition, they are households that use their own funds, equipment, and skills, and with the support of the collective, have net earnings of more than 1,000 yuan from the livestock industry. Most of the workforces in these households are engaged in livestock industry production; most do not contract to farm land; and some of them farm only fields to produce their grain rations and livestock fodder in a gradual movement toward specialized farming. Key households both contract the farming of land and the raising of livestock and poultry. The collective permits one member of the household's workforce to engage solely in livestock production. Net earnings from the livestock industry amount to more than 500 yuan. They sign economic agreements with production teams, and within households there are the beginnings of a specialized division of labor. Combinations of households means peasant households that have a fairly large surplus of work days, but that themselves have difficulties in developing household livestock raising enterprises and thus receive support from the collective, the commune members turning over to the collective funds, and manure as stipulated, with workpoints being recorded and participation in distributions permitted, the households themselves deciding the kinds of livestock they will raise. Sometimes the livestock are purchased by production teams and raised by households, contracting being done with the collective for a small amount of livestock or poultry, such as contracting for one or two head of cattle or several hogs. Ordinary households means common peasants who develop livestock raising industries with the help of household workforces, using their own fodder and customary methods. No matter what type of household, all institute centralized management, and all

receive support from the collective with some funds (or young livestock), fodder (or fodder producing land), with commune members turning over funds and manure to the collective, having workpoints recorded, and participating in distributions. This method not only makes the most of the superiority of the collective economy, but also arouses the initiative of individual commune members. It both insures growth of key households and maintains a mass aspect. This is a new path for gradual specialization and development of commodity production in the livestock industry following general institution of production responsibility systems. Now the number of specialized households, key households, and combinations of households in Taian Prefecture has grown to more than 400,000, accounting for one-third the total number of peasant households in the prefecture as a whole. Last year the prefecture's livestock industry reached an all-time high, with gross earnings amounting to 167 million yuan, which was 15 percent of gross agricultural earnings.

Though not much time has passed since adoption of the "four households" rising together system for growth of the livestock industry in Taian Prefecture, there have been evident advantages: First is an all around growth of the livestock industry, the six major livestock animals proliferating. The "four households" all rising together method has focused development of the livestock industry on the myriad of peasant households, bringing together through economic support the collective and commune member families, both working in harness together, each household developing and being able to raise whatever animals it likes, or raising whatever is needed, for an initial change in the imbalance within the livestock industry. Raising of large livestock has rapidly climbed again; steady growth has taken place in hog raising, and the raising of sheep and goats, rabbits, and poultry has seen all around development. A survey done in Luyao Production Brigade, Feicheng County shows that this brigade developed more than 300 specialized households, key households, and combinations of households last year, and that the number of large livestock increased from 105 head to 490 head; the number of sheep and goats rose from 37 to 802; the number of rabbits increased from 87 to 3,200; the number of poultry went from 3,000 to 12,600; and the number of live hogs being fed rose by 600 head. Earnings from the livestock industry in the brigade amounted to 30.2 percent of average distributions. Second, is gradual movement toward specialization and development of commodity production. Last year, of the prefecture's more than 100,000 specialized households, key households (accounting for 8 percent of the total number of peasant households in the prefecture) produced 80.2 million yuan net earnings from the livestock industry. This amounted to almost one-half the total earnings from the livestock industry in the prefecture as a whole. In Fengtai Brigade, 150 specialized households and key households last year alone provided the country with 200,000 jin of various kinds of meat, an average per household contribution of 1 ton of meat. The commodity rate rose, and costs noticeably declined. A survey of 100 production teams in Taian and Laiwu counties showed more than 25 percent less labor being used than last year by specialized households raising animals, and a 30 percent saving in forage grass, plus about a 25 percent saving in feed. Third is use of traditional livestock raising skills and promotion of new livestock raising techniques. Specialized households and key households have both made the most of commune member proficiency in a particular line, and have become leading households in the promotion of advanced feeding techniques. At the present time, an unprecedented

enthusiasm for "science" has occurred among the prefecture's households engaged in the raising of livestock. Everywhere the peasants are seeking fine breeds, inquiring about feed formulas, and asking advice on ways of preventing and treating diseases. They are striving to raise fine breed livestock and poultry, striving to use mixed feeds, and striving to use advanced, scientific feeding techniques. Formerly the entire prefecture annually bred only 200,000 fine breed chickens, but in a single quarter of this year breeding was expanded to more than 1.8 million. Fourth is use of local funds to tap production potential. With development of the livestock industry, various sources of forage grass and livestock feed and family compounds have been put to full use, and members of commune households are able to play a role in the livestock raising industry. Commune member Yang Ruxiang [2799 1172 4382] of Shengzhuang Commune in Taian City had a crippled son who formerly had nothing to do at home for many years. After his family became a specialized household and labor was equitably divided among family members, he became the mainstay in livestock raising. Last year alone the family raised 13 head of hogs, plus two sows, five oxen, and also contracted the raising of 13 hogs for the production team. Thanks to the painstaking care and scientific feeding done by the family as a whole, net income amounted to more than 3,200 yuan. Last year more than 100,000 specialized households and key households in the prefecture had average per household earnings of 764 yuan, and 18,000 specialized households had net earnings of more than 1,000 yuan.

In adopting the system of "four households" all rising at the same time for development of the livestock industry, Taian Prefecture made sure to master four problems as follows: 1) Adaptation of general methods to specific situations and proceeding in accordance with capabilities. In the development of various forms of livestock feeding households, communes and brigades made sure on the basis of individual economic strength, the workforce situation, natural resources, and the livestock raising habits of the masses, to develop whatever kind of household that was suitable, and to raise the kinds of livesotck that could be raised with no "arbitrary uniformity." 2) Diligent implementation of policies and supporting all types of households in developing household livestock feeding industries, thereby linking the collective and commune member household so that the myriad of peasant households and the collective formed a totality. Prefecture support to commune members took four main forms as follows: One was collective support with some funds and help in the purchase of livestock (or poultry) to those households who increased the raising of livestock and poultry above and beyond the already established household livestock raising industry, repayment being made after the households realized earnings. Second was help in solving problems in getting forage grass and livestock feed. In some cases those raising a large number of livestock or poultry were assigned land for the raising of livestock feed; in other cases, forage grass or livestock feed was apportioned on the basis of distribution prices; and in still other cases, help was given with the processing and mixing of feeds. Third was help in building of livestock pens and poultry coops. In some cases the collective provided the labor and materials; in some cases consturction was done centrally, and in some cases help was given in the form of some materials or workpoints. Fourth was the use of bonuses, bonus workpoints being awarded on the basis of the number of livestock raised in some cases. In other cases a system was used whereby little cash was surrendered to higher authority and high distributions were made, meaning surrender of money to the production team at a rate of from

10 to 20 percent below the production team individual work value, but distributions being made on the basis of total work value. 3) Establishment and perfection of an all around service system. To meet needs of "four households" rising at once, the prefecture set to work to establish several service systems. One was a livestock and poultry fine species breeding system. In addition to the fine breed farms established by the prefecture and counties, 900 fine breed livestock and poultry breeding households and 340 stud livestock households were developed. A second was a veterinary medicine service system. In addition to operating county and commune veterinary medicine stations, all production brigades trained one or more veterinary personnel, and promoted contracting of livestock and poultry epidemic prevention and livestock raising care techniques. Third was a livestock feed service system. Some communes and counties began to construct livestock feed processing plants, and most production brigades set up livestock feed processing plants. Fengtai Production Brigade in Taian City established a livestock feed production and supply cooperative to produce balanced livestock feeds for livestock raising households. Loyao Production Brigade in Feicheng County established a livestock feed processing plant with a daily output of 10,000 jin. Fourth was a production and marketing service system. The prefecture established an integrated livestock, industrial, and commerical company, and six different communes established economic diversification service companies or trade warehouses. Culai Commune warehouse in Taian City signed an agreement with Shanghai for the raising of geese, last year supplying Shanghai with 350 tons of goose. This year they signed another agreement for 1,200 tons. 4) Good ideological work to assure the handling of matters in accordance with agreements. In the institution of "four households" all rising together, in addition to continuing to be guided by state plan and under the centralized direction of production teams, it is also necessary to give attention to frequent education of the various kinds of livestock raising households in patriotism and collectivism so that while they are developing household livestock feeding, they will think of the country and the collective and consciously handle matters in accordance with agreements, first of all assuring fulfillment of state procurement plans for livestock and poultry, surpluses being sold in markets, and also turning over funds and manure to the collective as agreed, in the proper handling of the interests of the country, collectives, and individuals.

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CSO: 4007/1550

BRIEFS

HEAVY RAINS--Most counties and districts in Tianjin Municipality experienced torrential or heavy rains from daytime through the night of 4 August. Ji County had 50 millimeters of rain, the most in the municipality. Some fields were covered with water. [SK062208 Tianjin City Service in Mandarin 1430 GMT 5 Aug 82 SK]

CSO: 4007/537

BRIEFS

ANIMAL HUSBANDRY--Xinjiang has scored a steadily increasing output in animal husbandry for 5 consecutive years. According to statistics, the total number of livestock at the end of June was 34 million, an increase of 1.2 million over the same time last year and a record. Fewer than usual animals died during the winter. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 20 Jul 82 HK]

CSO: 4007/537

BRIEFS

AGRICULTURAL MEETING--On 16 July, the Zhejiang Provincial Party Committee and people's government held a province-wide broadcast rally on summer harvesting and planting, calling for efforts to overcome natural disasters and win victory in summer harvesting and planting. Vice Governor Wu Zhichuan presided over the meeting. Chen Zuolin, secretary of the provincial party committee and vice governor, spoke. He called for efforts to fulfill the year's grain output target of 30 billion jin. [Hangzhou Zhejiang Provincial Service in Mandarin 1030 GMT 16 Jul 82 OW]

GRAIN PROCUREMENT--Recently the provincial food department held a meeting of prefectural and city food bureau directors to arrange early and middle-season rice procurement and storage work. Vice Governor Wu Zhichuan spoke at the meeting. He said that a good early rice harvest is in sight in the province. Thus far, more than 600 million jin of spring grain have been procured and put in storage in Zhejiang, overfulfilling the provincial spring grain procurement target by 32 percent. [Hangzhou Zhejiang Provincial Service in Mandarin 1030 GMT 17 Jul 82 OW]

FARM, SIDELINE PRODUCTS--During the first 6 months of 1982, Zhejiang procured 17,350 million yuan worth of farm and sideline products, marking an increase of 4.5 percent compared with that in the same period in 1981. They include 5.53 million hogs, 1.42 million dan of tea and many other products. [Hangzhou Zhejiang Provincial Service in Mandarin 1030 GMT 25 Jul 82 OW]

LAND RECLAMATION--Since 1978, Zhejiang has reclaimed over 1 million mu of cropland from tidal land, hilly areas and river banks. The reclaimed areas produce 300 to 400 million jin of grain and other agricultural produce a year. [Hangzhou Zhejiang Provincial Service in Mandarin 1030 GMT 9 Aug 82 OW]

COMMUNE, BRIGADE PRODUCTS--During the first half of 1982, Zhejiang's commune- and brigade-run enterprises turned out 2.7 billion yuan worth of products, marking an increase of 8.9 percent over that of the same period in 1981. [Hangzhou Zhejiang Provincial Service in Mandarin 1030 GMT 26 Jul 82 OW]

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Sept. 1, 1982